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*A. A. Wood*

# THE **C**ONDOR

A Magazine of Western  
Ornithology



Volume XXXVII

July-August, 1935

Number 4



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# THE CONDOR

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WESTERN ORNITHOLOGY

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COOPER ORNITHOLOGICAL CLUB

VOLUME XXXVII

JULY-AUGUST, 1935

NUMBER 4

## BIRD LIFE AT HORSE LAKE, BRITISH COLUMBIA

WITH THREE ILLUSTRATIONS

By J. A. MUNRO

Horse Lake, nine miles long and a quarter to a half mile wide, is an expansion of Bridge Creek in the Cariboo region of British Columbia. The altitude is approximately 3600 feet; the life-zone is Canadian with some intrusion of Transitional fauna. During the period July 31 to August 8, 1934, an opportunity occurred to study the bird life of this hitherto unvisited region. Observations were confined chiefly to an area of two square miles on the south side of the lake near its western end. Within this circumscribed area there are seven definite habitats.

1. **The open forest.**—This consists of a peninsula covered with open woods of trembling aspen, among which are Douglas firs of great age, clear stands of lodgepole pine and clumps of black spruce. The original forest was fire-swept many years ago and here and there are prostrate trees now reduced to mounds of crumbling wood which gradually are being absorbed by the forest floor. There is little underbrush. On the north side thickly wooded banks drop steeply to a shore-line growth of alder, willow and mountain birch. Balm of Gilead grows along the west shore, the apex of the peninsula. On the south side the aspen forest ends abruptly near the edge of, but well above, a swamp area which occupies the shoreward portion of a marshy bay. An ungraded road cuts through the forest to a ranch house and clearing on the end of the peninsula.

### BIRDS OF THE OPEN FOREST

Gray Ruffed Grouse  
Western Goshawk  
Sharp-shinned Hawk  
Cooper Hawk  
Golden Eagle  
Eastern Nighthawk  
Rufous Hummingbird  
Red-shafted Flicker  
Red-naped Sapsucker  
Rocky Mountain Hairy Woodpecker  
Hammond Flycatcher  
Western Wood Pewee  
Olive-sided Flycatcher  
Tree Swallow  
Cliff Swallow  
Western Crow

Grinnell Chickadee  
Red-breasted Nuthatch  
Western Robin  
Sierra Hermit Thrush  
Mountain Bluebird  
Western Ruby-crowned Kinglet  
Cedar Waxwing  
Cassin Vireo  
Red-eyed Vireo  
Tennessee Warbler  
Orange-crowned Warbler  
Audubon Warbler  
Townsend Warbler  
Shufeldt Junco  
Western Chipping Sparrow

A migration of Tennessee Warblers, Townsend Warblers and Orange-crowned Warblers, accompanied by a few Western and Ruby-crowned kinglets, took place on August 7 and 8. Small bands of these birds frequented the tops of the tall aspens and their actions plainly indicated this to be a migratory movement. The raptors also were migrants. Otherwise the birds listed above, most of which were seen daily or at least several times, were believed to have nested in this habitat.



Fig. 35. Open forest habitat: Horse Lake, British Columbia.

The Western Crow, apparently a scarce bird locally, was seen once, as also were the Golden Eagle, Goshawk, Sharp-shinned Hawk, and Cooper Hawk. The Red-shafted Flicker, reported to have nested on the peninsula, was heard and I picked up a red primary feather. The abandoned nests of Cliff Swallows under the eaves of a log barn proved the earlier presence of this species. It was reported that a pine squirrel had eaten the young in one of these nests. Earlier in the summer a pair of Mountain Bluebirds occupied a bird house near the ranch buildings. These had left before my arrival.

Four sapsuckers collected, an adult female and three juvenal males, are typical of the race *Sphyrapicus varius nuchalis*; *ruber* occupies the Bowron Lake region, about 125 miles north, and its range probably extends some distance farther south. Just where the two races come together, if they do, has not been established. *Ruber* is unknown as a migrant in south-central British Columbia and must, obviously, reach

the northeastern section of its breeding ground in the interior from the west or the southwest. It seems likely that this race occupies a narrow belt of territory extending in a northeasterly direction from Howe Sound and Harrison Lake to the Barkerville-Bowron Lake region. The migration of the dry-belt race, *nuchalis*, is north and south. It has not been recorded from the coast of British Columbia.

2. The willow swamp.—Several acres of willow swamp lie between the high wooded area of the peninsula and a marshy bay to the south, the edge of which was outlined by a rank growth of tules. The swamp and the high wooded area of the peninsula are separated by a narrow strip of water. The maximum depth of water in August, 1934, was two feet. Tree growth included two or three species of willow (*Salix*), that reached a height of ten feet, and clumps of a dwarf birch. The dominant plants were Cyperaceae of several species. Other hydrophytic plants were bulrush (*Scirpus*), smartweed (*Polygonum amphibium*), a water butter-cup (*Ranunculus multifidus*), bladderwort (*Utricularia vulgaris*), peppermint (*Mentha canadensis*), *Potamogeton natans*, and duckweed (*Lemna* sp.). This area contained an unusual association of boreal and transitional bird species.

#### BIRDS OF THE WILLOW SWAMP

American Bittern  
Marsh Hawk  
Wilson Snipe  
Rufous Hummingbird  
Alder Flycatcher  
Long-tailed Chickadee  
Cedar Waxwing  
Eastern Yellow Warbler

Grinnell Water-thrush  
Western Yellow-throat  
Giant Red-wing  
Rusty Blackbird  
Western Savannah Sparrow  
Gambel Sparrow  
Lincoln Sparrow  
Song Sparrow

The young in first plumage of the four sparrows noted above were much in evidence. So also were juvenals of the Yellow Warbler and Yellow-throat. On one occasion a juvenal Song Sparrow and a juvenal Lincoln Sparrow, perched close together in the same bush, were in the field of my binoculars at one time. Red-winged Blackbirds had nested earlier in the tules and Rusty Blackbirds in the willows. The young of the former were in juvenal plumage; the young of the Rusty Blackbird were molting to first winter plumage. The Red-wing population consisted of three pairs with young, totalling fourteen individuals; the Rusty Blackbird colony was estimated to be twenty, including adults and young.

On August 3 a nest of the Cedar Waxwing (*Bombycilla cedrorum*) containing four eggs was found in a willow, well out in the swamp where the water was eighteen inches deep. The deep cup-shaped nest built of dry moss, willow cotton, twigs, and grass, and lined with willow bark fiber, was woven among five or six upright willow branches near the top of the tree. The sitting bird was very tame. With the possibility of Bohemian Waxwing in mind I pushed aside the intervening branches and pulled down toward me the higher, more slender, branches holding the nest until it was nearly on a level with my eyes so that the white under-tail coverts of the sitting bird could be seen. Not until then did the bird leave.

The nesting of the Rusty Blackbird (*Euphagus carolinus*) at Horse Lake marks a considerable extension of its breeding range in British Columbia. The most southerly breeding ground hitherto recorded was at Hazelton (Taverner, quoted by Brooks and Swarth, Pac. Coast Avifauna No. 17, 1925, p. 83). Hazelton is north of the 55th Parallel and west of the 127th Meridian; Horse Lake is south of the 52nd Parallel and close to the 121st Meridian.

The Brewer Blackbird was not seen at Horse Lake. This species nests commonly in the Lac La Hache Valley, fifty miles (by road) northwest. The altitude, 2649 feet, is almost a thousand feet lower than Horse Lake. The Lac La Hache Valley is a northern outpost of the Transitional zone isolated in the boreal forest and probably is the northern limit for the breeding of Brewer Blackbird in British Columbia.



Fig. 36. Willow swamp habitat at right, marshy bay habitat at left: Horse Lake, British Columbia.

The Red-winged Blackbird of the Horse Lake region proved to be a heavy-billed race closely resembling *Agelaius phoeniceus arctolegus*. Specimens of identical character have been taken in migration at Okanagan Landing, where, in some years, a large percentage of the wintering Red-wings are of this northern race.

It was new in my experience to find Song Sparrows (*Melospiza melodia*) nesting in the same environment as Lincoln Sparrows, Rusty Blackbirds, and Grinnell Waterthrushes. Subsequently it occurred to me that this might not be the Song Sparrow of the Okanagan dry belt with which I was so familiar, but another race associated with a boreal habitat. In a species so plastic as the Song Sparrow it might be expected that the individuals inhabiting such different environments as the transitional dry belt of British Columbia and the high swampy meadows of the boreal forest would have developed dissimilar characters. There was not an opportunity to put this reasoning to the test, because the few adults seen were in such worn plumage as to be considered useless for comparative purposes; so no specimens were taken. This applied also to most of the young birds, which were molting from the juvenal to the first winter plumage. One unworn juvenal obtained is somewhat darker on the dorsal surface than are birds of the same age from the Okanagan Valley. Further studies may show that Horse Lake comes within the breeding range of a dark Song Sparrow which in southern British Columbia is known as a migrant and winter visitant. Evidence for the existence of such a race is herewith submitted.

A creek bottom near Okanagan Landing, through all its gradual evolution from a brush-covered and swampy meadow to a cultivated area of grain fields with restricted natural cover, has maintained a large Song Sparrow population. Years ago it was observed that some fall and winter taken specimens were, in comparison with the breeding birds, darker and larger—larger, that is, in bulk, not necessarily

in actual measurements. To this large, dark bird the name *rufina* seemed applicable at that time, and the name *morphna* was used to designate the breeding birds.

The dark Song Sparrows arrived usually in November and at this time the local birds, the few which had not migrated, were still in possession of their summer territories comprising brushy thickets and the weed patches encompassed by growths of brush. For the most part the new arrivals frequented dense patches of amaranthus, sweet clover, Canada thistle and lamb's quarters, which occupied open parts of the meadow. It is not to be inferred that definite segregation took place. These extensive weed patches, at some distance from the brush thickets and for the most part unoccupied, were attractive because of the abundant food supply afforded in the shape of seeds. The presence of the "northern" birds was noticeable because, for a short time prior to their arrival, the species usually was scarce, or, in some years, so far as could be determined, absent. More precisely, in November, 1932, during a period of four days no Song Sparrows could be found; thereafter the species represented largely by dark birds, became abundant.

This race can usually be recognized in life. In the hand the large size and dark coloration of the dorsal surface—less gray than *merrilli* and less rufous than *morphna*—is apparent. Moreover, in comparison with the two races mentioned, the bill is commonly longer, with a darker lower mandible. Winter specimens of this dark Song Sparrow, which I have examined from the Okanagan Valley, Vancouver, Vancouver Island (Comox and Departure Bay), and Portland, Oregon, all show the characters cited. For some time past, to avoid the use of an explanatory prefix such as "the large, dark Song Sparrow that winters in the Okanagan Valley," I have called this bird *inexpectata* (Riley, Proc. Biol. Soc. Wash., 21, 1911, p. 234), a name which is available and, in my opinion, appropriate. Swarth (Condor, 25, 1923, pp. 214-223) does not accept the validity of *inexpectata* which he considers indistinguishable from *morphna*.

3. The marshy bay.—This is a shallow bay approximately half a mile long and a quarter of a mile wide. To the north lies the wooded peninsula (habitat 1), to the south a rough, timbered mountain side (habitat 6), to the east a sedge marsh of about eighty acres (habitat 4), and to the west the open lake. The outermost fringe of shore-line vegetation comprises tall, rank bulrush, succeeded by bog-rush, which in turn gives place to growths of sedge as the water shallows. The marsh belt was widest on the north and east sides of the bay and thinned out to a comparatively narrow strip on the south side.

#### BIRDS OF THE MARSHY BAY

Common Loon  
Holboell Grebe  
Osprey  
Bald Eagle  
Baldpate

Barrow Golden-eye  
American Coot  
Spotted Sandpiper  
Black Tern  
Kingfisher

Here was ample nesting cover for diving ducks, and the dryer areas adjoining provided suitable cover for pond ducks; but water-fowl were conspicuous because of their scarcity. The entire duck population consisted of one brood each of Baldpate and Barrow Golden-eye. One pair of Coots with two large young also frequented the bay. Some factor necessary to the requirements of a summer water-fowl population evidently was lacking. Food plants comprised: *Potamogeton perfoliatus*, *Potamogeton pectinatus*, *Chara*, and *Ceratophyllum demersum*. The growth of

these plants was not profuse and only *Chara* was abundant. *Potamogeton pectinatus* occurred in isolated plants growing a foot or more apart, and in no place had there developed the thick masses characteristic of this plant in other waters. The water temperature was approximately 60° Fahrenheit (estimated on August 5); the pH was not taken. Animal food consisted of numerous unidentified insects (adults and larvae) and 2 gastropods—a *Limnea* and a *Planorbis*.

There appeared to be ample food to satisfy the requirements of a large colony of Black Terns which nested in the sedge marsh and which were constantly seen hawking over the shallow waters of the bay, or passing to and from their nesting ground.

Two Bald Eagles, an adult and a juvenile, sometimes hunted near the mouth of the bay. On one occasion I watched the two birds tearing at the carcass of a large fish which had drifted in from the lake.

4. **The sedge marsh.**—This is an area of approximately eighty acres situated at the head of, and connected with, the marshy bay described above. This was the characteristic mountain hay-meadow of the region. The dominant plants were various species of sedge (*Carex*). Here and there open pools of water were covered by a luxuriant growth of smartweed (*Polygonum amphibium*) in profuse bloom. Along the shore were large, dense patches of cinquefoil (*Potentilla* sp.), and in some places fireweed grew shoulder high. In 1933 Horse Lake was higher than it had been for some years, as a result of which the entire meadow was flooded so late as mid-August. I learned later that high water conditions persisted into September so that much of the wild hay crop remained uncut.

#### BIRDS OF THE SEDGE MARSH

Great Blue Heron  
Common Mallard  
Marsh Hawk  
Duck Hawk  
Eastern Sparrow Hawk  
American Coot  
Killdeer  
Wilson Snipe  
Solitary Sandpiper

Greater Yellow-legs  
Lesser Yellow-legs  
Least Sandpiper  
Black Tern  
Eastern Yellow Warbler  
Western Yellow-throat  
Rusty Blackbird  
Giant Red-wing

Birds found exclusively in this habitat were: Great Blue Heron, Killdeer, Least Sandpiper, Solitary Sandpiper, Greater Yellow-legs and Lesser Yellow-legs. The Great Blue Heron remained well out in the sedges; the waders frequented an area of soft mud at the edge of the meadow. A pair of Killdeers had nested in the vicinity and were accompanied by young; the other waders, with the possible exception of the Greater Yellow-legs, were migrants. Ten Greater Yellow-legs, ten Lesser Yellow-legs and five Least Sandpipers were seen on August 7. Two days earlier an adult Greater Yellow-legs showed what seemed to be parental interest in a full-grown young bird which accompanied it, and, when excited by the presence of human observers, scolded noisily, with alarm notes characteristic of the nesting season. Wilson Snipe, apparently migrating, were abundant, as many as forty being flushed from the sedges during one morning's walk.

The Great Blue Heron was undoubtedly a wanderer, perhaps from the coast. Non-breeding individuals of this species are encountered each summer at different points in the interior of British Columbia. They have been seen at Lac La Hache and Bridge Lake in the Cariboo region, at Stump Lake in the Nicola district, and

at various places in the Okanagan Valley where as many as twelve individuals have been seen at one time beside a small, muddy lake. There is no definite breeding record for the interior, and the place of origin of these summer wanderers is uncertain. Two specimens which were picked up dead in the lower Okanagan Valley have been identified as of the coast race, *fannini*. These birds with several others had died of



Fig. 37. Sedge marsh habitat: Horse Lake, British Columbia.

starvation during the winter when their feeding grounds froze over, a fate which probably overtakes most of the individuals that attempt to winter in the interior of British Columbia.

The only ducks living in the meadow were a brood of seven full-grown Mallards, apparently raised in the vicinity and seen daily. Three Baldpates appeared one morning, and on another day three Mallards visited an open pool for a short time. These visitors were migrants.

In the center of the meadow, "islands" of willow and dwarf birch were frequented by Yellow Warblers, Yellow-throats, Lincoln Sparrows, Song Sparrows, Savannah Sparrows and, occasionally, Rusty Blackbirds and Red-winged Blackbirds.

5. **The open fields.**—A small, cultivated area with standing crops of oats and brome grass hay, a piece of dry hay meadow, and several small groups of trembling aspen are included in this habitat.

#### BIRDS OF THE OPEN FIELDS

Columbian Sharp-tailed Grouse  
Eastern Sparrow Hawk

Western Vesper Sparrow  
Western Savannah Sparrow

The Sharp-tailed Grouse and the Vesper Sparrow were seen only in this habitat. Both species were scarce, the grouse being represented by a female with half-grown brood and the Vesper Sparrow by one adult.

6. **The mountain side.**—This consisted of the north slope of a mountain rising approximately 500 feet above the lake. This rough, steep hillside was covered by a coniferous forest dominated by lodge-pole pine. It had been fire-swept in places.



Fallen trees in tangled confusion, with brush growth in the interstices, made walking difficult.

#### BIRDS OF THE MOUNTAIN SIDE

Western Red-tailed Hawk  
Western Pileated Woodpecker  
Batchelder Woodpecker  
Eastern Kingbird  
Olive-sided Flycatcher  
Grinnell Chickadee

Red-breasted Nuthatch  
Western Golden-crowned Kinglet  
Audubon Warbler  
Northern Pine Siskin  
Red Crossbill

The mountain side was a hunting ground for two Western Red-tailed Hawks, a normal pale adult and a very dark juvenile. The latter was examined at close range while it perched in a willow clump at the base of the mountain. This bird was so black as at first to be mistaken for a Swainson Hawk in the dark chocolate-colored phase. From the willows it flew to a dead aspen near-by and then on to the wood's edge, whence it rose and commenced ascending in widening circles, sometimes soaring with wings and tail so expanded as to form almost a complete plane. Meanwhile the adult, a bird with light underparts, soared and screamed across the face of the hill. Finally the two birds came closer and together gradually drifted out of sight.

A small band of Red Crossbills, several times observed, were feeding on seeds of the lodge-pole pine. Those examined at close range proved to be adults in worn plumage. The testes of males taken measured 2 to 3 mm., and the reduced size of these organs, together with the worn plumage, suggested that these birds had bred six weeks or two months earlier.

7. **The spruce swamp.**—Two small islands of black spruce lie near the base of the timbered mountain referred to above, at the edge of, and on the same level with, the sedge swamp from which they are separated by a dense belt of willows. Underfoot was a thick tangle of down timber, thickets of dwarf birch, pools of water and, in places, a deep growth of spongy moss—not sphagnum.

#### BIRDS OF THE SPRUCE SWAMP

Franklin Grouse  
Gray Ruffed Grouse  
Olive-sided Flycatcher  
Red-naped Sapsucker  
Batchelder Woodpecker  
Rocky Mountain Jay  
Grinnell Chickadee

Red-breasted Nuthatch  
Rocky Mountain Creeper  
Western Ruby-crowned Kinglet  
Orange-crowned Warbler  
Audubon Warbler  
Northern Pine Siskin  
White-winged Crossbill

Birds found solely in this habitat were Franklin Grouse, Rocky Mountain Jay, Rocky Mountain Brown Creeper, Northern Pine Siskin and White-winged Crossbill. The last mentioned were feeding on green spruce seeds.

This little swamp proved to be one of the most attractive habitats of the diversified area under review. Tall, slim spruces at the meadow's edge, bluish against a green background of pines—how they had fascinated me as I searched for water-fowl in the sedge marsh! So, one morning, the line of beckoning trees became my objective and I waded through the marsh directly toward them, floundered through their encircling belt of willows and finally came to rest upon an uprooted tree within the boundaries of the spruce stand. Pygmy Owl call, and squeak,

brought immediate response from a score of birds. Almost at once appeared Rocky Mountain Jays, imitating the owl call perfectly, while from the hidden depths of the swamp came that angry call of the Red-naped Sapsucker which mimicks, or seems to mimick, the Red-tail's scream. White-winged Crossbills with metallic notes of alarm alighted on the topmost twigs of the spruces above, and a mixed crowd of Ruby-crowned Kinglets, in dull, juvenal dress, Red-breasted Nuthatches, Aubudon Warblers, Chickadees, and a Brown Creeper flitted and scrambled through the surrounding trees as they searched for the source of those exciting noises.

A total of 77 species was observed (or recorded from other evidence) in the seven habitats studied during the course of a week at the latter end of the breeding season. Of these, 65 species can be regarded as summer visitants, or residents, and 12 species as vagrants or migrants.

Okanagan Landing, B. C., Canada, July 15, 1934.

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## THE CHANGING DISTRIBUTION OF THE WESTERN MOCKINGBIRD IN CALIFORNIA

WITH TWO MAPS

By JOHN R. ARNOLD

For a number of years the impression has been gaining ground among students of bird-life that the distribution of the Western Mockingbird (*Mimus polyglottos leucopterus*) in California has been undergoing considerable change. Recently a study was undertaken for the purpose of assembling definite data that would decide whether this impression were founded on fact, and if so, whether the observed change in distribution could be correlated with any causal factor.

The writer has secured his facts from three main sources: (a) from published reports in which the mockingbird has been mentioned; (b) from unpublished notes of experienced ornithologists and oologists in various parts of the State; and (c) from the records and files in the Museum of Vertebrate Zoology and the California Academy of Sciences. The writer's own observations were made while residing in mockingbird country as well as during frequent trips to various parts of central California, with the mockingbird the special objective.

The writer wishes to express great appreciation to the members of the staff of the Museum of Vertebrate Zoology for guidance and aid in his study and to members of the Cooper Ornithological Club for the use of their notes.

In 1911 there appeared a paper under the title, "Distribution of the mockingbird in California" (Grinnell, 1911), which included a map of California showing the distribution of the mockingbird as of that date. In addition to the map were several pages citing authorities for the data upon which the map was based and discussing the status of the species prior to 1911. This discussion was chiefly concerned with the changes in the mockingbird population of southern California, that area apparently being the only one in which an especially noticeable change had occurred. Since 1911, further published reports have brought out the fact that the mockingbird had been actively spreading into regions other than the southern area. Tyler (1913) first reported a changing distribution in the San Joaquin Valley; Wilder (1923) reported an unusual occurrence in Humboldt County; Kline (1931)

reported a nesting record for Santa Cruz; and A. H. Miller (1931) published an account of a nesting colony at Richmond, Contra Costa County.

A copy of the map from Grinnell's paper reproduced here (fig. 38) shows the distribution in California at that time. The map of the distribution of the mocking-

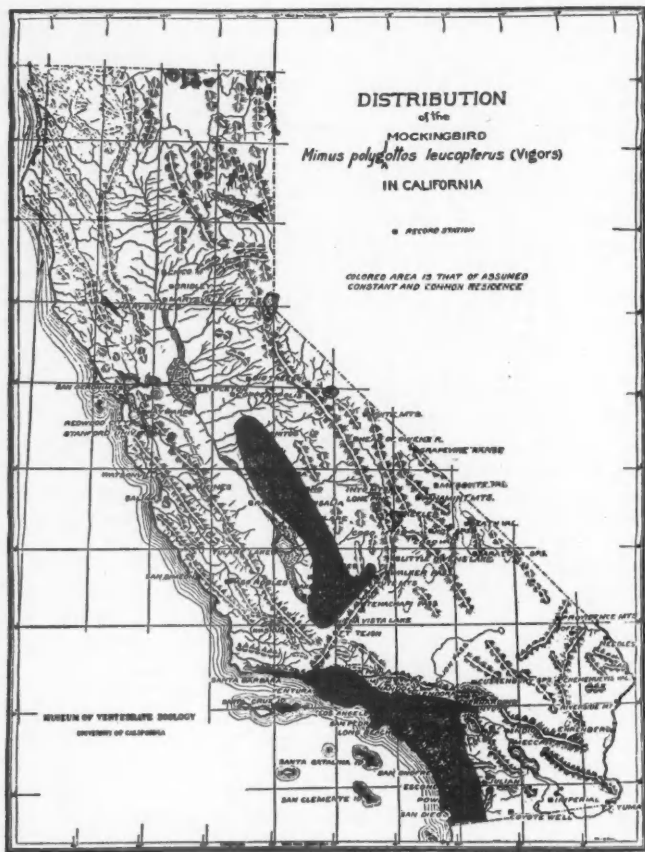


Fig. 38. Grinnell's map of Mockingbird distribution in 1911 (from *Auk*, 28, opp. p. 293).

bird in July, 1934 (fig. 39), shows the change in distribution that has occurred during the subsequent twenty-three year period. For the purpose of discussion, the areas of changing distribution may be grouped as follows: (1) the central valleys, (2) the southern California area, and (3) the coastal areas.

Throughout the great central valleys of California, the San Joaquin and the Sacramento, the mockingbird has greatly extended its range during the last decade. Whereas in 1911 the breeding area in the San Joaquin Valley was designated as

"From the vicinity of Merced south through the San Joaquin Valley to the region about Bakersfield . . ." (Grinnell, 1911, p. 294), it now extends from north-central San Joaquin County, on the north, to south of Bakersfield. In addition to the south-north expansion, the range has been extended from four to ten miles west-

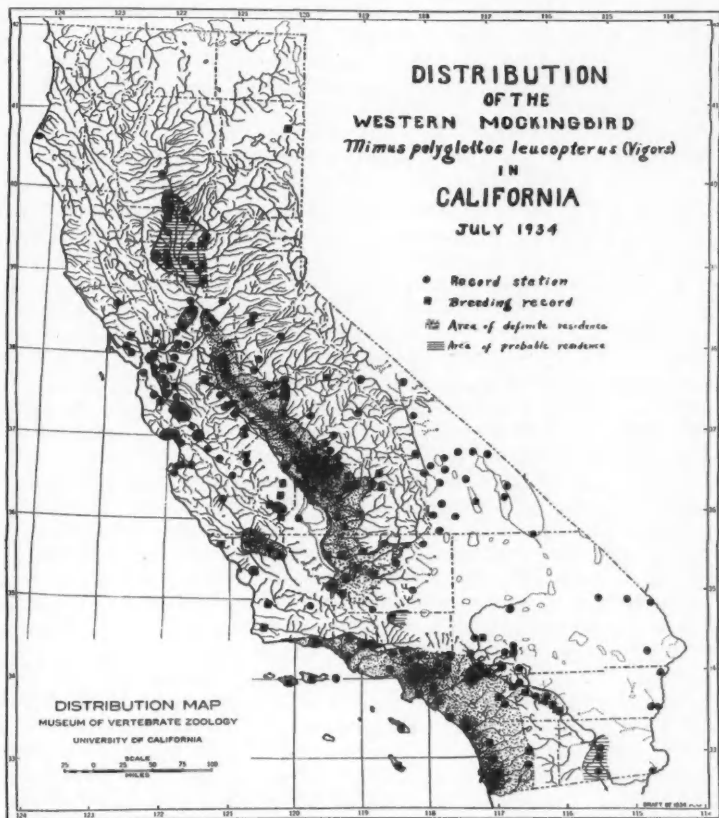


Fig. 39. Mockingbird distribution in California according to records up to July, 1934.

ward until, in general, the Kings-San Joaquin River drainage system is the western boundary. Through that strip of the San Joaquin Valley known as the "West Side," various stations of breeding residence occur. On the east side of the San Joaquin Valley, in Tulare County, the range has been extended to Three Rivers and Woodlake, while there is a breeding record from Hospital Rock, Sequoia National Park (Powell and Fry, MS, 1934). In general, the mockingbird does not nest in the blue oak belt of the foothill territory on the east side of the San Joaquin Valley. Exceptions to this are the records from east of Snelling, Merced

County, at La Grange, Stanislaus County, and in Pleasant Valley, Mariposa County (Grinnell and Storer, 1924). In the southern portion of the San Joaquin Valley, in Kern County, the mockingbird has extended its range but slightly. The bird now breeds somewhat commonly in Taft and around Buena Vista Lake (Stansell, MS, 1934); it breeds west from Wasco at least as far as Semitropic (Truesdale, MS, 1932); and it is quite common in the Edison orange district to the southeast of Bakersfield. In the Buena Vista Lake region it has been known to nest in the six foot *Atriplex* bushes, but in Taft it chooses the cottonwood (Stansell, MS, 1934). In other portions of Kern County its nesting sites are similar to those in the rest of the San Joaquin Valley.

This increase in the breeding range of the mockingbird in the San Joaquin Valley is doubtless due to several factors, all related. The outstanding factor in the cause for the spreading of the mockingbird in the area is the expansion of certain types of agriculture, this in itself related to water supply, and this latter dependent largely on the general climatic character of the region.

In the Sacramento Valley, the area about Sacramento seems to be an extension of the breeding territory at the north end of the San Joaquin Valley, while the area about Davis, Yolo County, in which the mockingbird was first reported nesting in 1928 (Storer, MS, 1933), seems to constitute a distinct area of residence, without connection, at the present time at least, with other areas. The Marysville area, in the northern portion of the Sacramento Valley, is marked on the map as an area of probable breeding because the writer could locate no records of breeding since those of Belding in 1890 (Belding, 1890). Sight records for nearly every month, however, point to definite residence in this region (Neff, MS, 1934).

Southern California, called by many a "mockingbird metropolis," is an area in which the mockingbird population has increased probably tenfold, according to Mr. George Willett. In this region the range of the mockingbird has not been extended on all fronts, but only in some directions. In the Santa Barbara region it may be noted that the mockingbird now breeds at Santa Maria and Lompoc. This may indicate a continuous breeding area along the immediate coastal slope from Santa Barbara to San Luis Obispo and Paso Robles, for the birds have been noted at various ranch houses between Santa Barbara and Santa Maria (Stevens, MS, 1934). However, it seems unlikely that the mockingbird will be able to establish more than a chain of breeding colonies because of the existing mountain barriers.

In Los Angeles County the area of residence for the mockingbird has increased northward, and breeding records for Antelope Valley (Stevens, MS, 1934) seem to indicate the possibility of an even greater expansion in this portion of the area. In San Bernardino County the mockingbird has spread to the base of the San Bernardino Mountains, a slight yet noticeable change. In addition, the bird has been reported (Pierce, MS, 1934) as nesting occasionally east of Victorville, a location on the Mohave Desert. Probably the greatest extension of breeding range has occurred in Riverside County, where the expansion eastward as far as Coachella Valley (Clary, MS, 1934) and Mecca (van Rossem, 1911) appears to have followed the Southern Pacific Railroad through San Geronimo Pass. Climatic conditions, as well as the vegetation, of the series of towns are probably favorable through this pass, in which there is an arm of the Lower Sonoran life-zone. While the nests in this area are often found in native desert plants on the open desert, mockingbirds are known to drive the shrikes from olive trees and cotoneaster bushes to build their own nests (Clary, MS, 1934). The Imperial Valley, Imperial County,

seems to be another area of residence, but breeding records from this county are unknown to the writer.

Under the heading of coastal areas of changing distribution, the writer has grouped a number of small areas, some definitely coastal, others not as near the coast, but probably best discussed in this group. The northernmost coastal area is that of Richmond, Contra Costa County, in which a colony of six to twelve birds has established residence. This colony, of which the first reliable report is that of Miller (April, 1931), is exposed to the strong cold winds and frequent fogs off the bay, but the birds seem to be increasing in number. Mockingbirds have been reported from Pinole, six and one-half miles north of the Richmond location, but none seems to be present there now. Also in Contra Costa County, but separated from the Bay by the Berkeley Hills, is the colony at the town of Walnut Creek. The writer investigated this colony in July, 1934, after receiving a report of it from Mrs. E. A. Sykes of Walnut Creek. It was found that mockingbirds had been nesting in this region since 1929, and that now a colony of at least sixteen birds, and probably more, exists in this region. The conditions seem favorable for a still larger colony. At Hayward, on the southern arm of San Francisco Bay, wintering mockingbirds have been reported since 1899 (Emerson, 1899); but as far as is known to the writer the first breeding record was in 1931 (Cohen, MS, 1930). Hayward now supports a small colony of mockingbirds in the residential district, and Niles Nursery, ten miles southeast of Hayward, has two or three resident pairs (Carriger, MS, 1934).

In the San Jose-Gilroy area, mockingbirds have been reported since 1886, but the first breeding records here were in 1931 in San Jose (Pickwell, MS, 1931), and in 1928 in Gilroy (Unglish, MS, 1933). Although it is quite possible that these are not the first records, it seems certain that the mockingbird has only recently become a resident of this area. Santa Cruz is a truly coastal area in which the mockingbird has become a resident; in fact, most of the breeding records are within a mile of the shore-line. For at least fifteen years the mockingbird has been recorded as a winter visitant in Santa Cruz, but it did not nest there until about 1930 (Streator, MS, 1933; Kline, 1931). The mockingbird is not abundant in the city of Santa Cruz or at Twin Lakes, but a small colony seems firmly established. The mockingbird colonies of San Luis Obispo County are somewhat separated. The town of San Luis Obispo seems to support an isolated breeding colony, but scattered nesting records in the vicinity of Paso Robles, Shandon, the San Juan River, and in southern Monterey County indicate a larger contiguous breeding colony (Truesdale, MS, 1933).

Mockingbirds are not restricted to the mainland of California, but they also occur on islands off the coast. At the time of the 1911 report, the islands of Santa Cruz, Santa Catalina, and San Clemente were known as islands on which the mockingbird nested. Now, in addition to these islands, the island of Santa Rosa is known to have resident mockingbirds (Pemberton, 1928), and mockingbirds have been seen on Anacapa Island (Burt, 1911).

This study has shown that the mockingbird has, within a short period of years, extended its range in many parts of California. The map of the distribution in 1934, when compared with the map of the distribution in 1911, shows the places in which changes have occurred. The author realizes that it is entirely possible for mockingbirds to have occurred in some of the areas before observations from them had been reported, but this factor could not reasonably have affected all of the places involved.

## CONCLUSIONS

1. No single factor in itself will account for the changing distribution of the Western Mockingbird in California; in all areas the changing distribution is due to a combination of factors.

2. Arboreal plantings on a large scale in portions of the San Joaquin Valley, the Davis area, and in the Sacramento Valley have made those areas suitable for the support of mockingbird populations by furnishing food and appropriate nesting sites.

3. The planting of ornamental shrubbery, such as pyracantha, cotoneaster, toyon, and other berry-producers, has helped the mockingbird to establish residence in the vicinities of Santa Cruz and Walnut Creek, and probably in other localities also.

4. The seeming trend toward a drier climate in most parts of California, in particular, the dry years of 1928, 1929, and 1930, has, it is thought, been favorable to the mockingbird in those places in which the agricultural conditions have also become suitable for the bird. In other words, the mockingbird has apparently chosen to follow the orchard type of cultivation and the park-residence type of district whenever climatic conditions have favored its doing so.

5. In one locality, the Richmond area, the presence of a suitable nesting site, plus the onset of a drier period, seems to have been enough for the establishment of a colony. However, this colony is new, and its tenure is uncertain.

6. The mockingbird is a bird of somewhat roving habits in most portions of its range, and the population spreads for winter foraging. Thus on the borders of its general range individuals wander into new areas during the winter season.

7. The new breeding area on Santa Rosa Island probably is merely a case of undiscovered range, not a change in range.

8. If present dry, warm climatic conditions continue, and agriculture of the present kinds remain in status quo or further spreads, then it is to be expected that the mockingbird will continue to extend its range. Probably several of the smaller isolated colonies will link together into larger areas of residence.

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*Coalinga, California, March 18, 1935.*

## SYSTEMATIC STATUS OF SOME NORTHWESTERN BIRDS

By H. S. SWARTH

### *TRINGA SOLITARIA*

In our standard books, wherever the Solitary Sandpiper is dealt with, there is unhesitating recognition of two subspecies, Eastern (*Tringa solitaria solitaria*) and Western (*T. s. cinnamomea*), a recognition that I do not believe is warranted by the facts. In the A. O. U. Check-list there is a most positive and definite allotment of territory to each that, too, can not be substantiated. To clear up the uncertainty that I felt from the appearance of the first several specimens of this species that I collected in the Atlin region, British Columbia, I made an effort to get more, with a resulting series of nineteen skins. There are also at hand eight more from Yukon Territory near-by, six from Forty-mile, two from White Horse.

As regards subspecific characters, Ridgway (Birds N. and Mid. Am., pt. 8, 1919, p. 363) describes *cinnamomea* as follows: "Similar to *T. s. solitaria*, but larger; summer adults with upper parts much less distinctly spotted with whitish, white bars on tail averaging decidedly narrower (and blackish ones correspondingly broader), and middle pair of retrices often (usually?) wholly deep brownish gray; young with spotting on upper parts decided brownish buffy or cinnamomeous, instead of whitish." Brewster, in the original description of *Totanus solitarius cinnamomeus*, gives an additional character: "The outer primary finely mottled with ashy white along the border of its inner web for a distance of about an inch beyond the tips of the under primary coverts" (Auk, 7, 1890, p. 377). I have carefully checked all these features within my Atlin series and as compared with series from other parts of North America.

First, as to size. Tables of measurements that I have compiled of all available specimens would occupy too much space for presentation, and I will restrict myself to some figures showing length of wing, commonly accepted as an index to general size. In support of the statement ascribing greater size to *cinnamomea*, Ridgway (*loc. cit.*) gives the following wing measurements: *T. s. solitaria*, wing, male, 121.5-129.5 mm.; female, 126-134. *T. s. cinnamomea*, male, 124-137; female, 137-142.

Fourteen male birds from Atlin have the following wing measurements: 124.5, 126.5, 127.5, 129.0, 130.0, 130.0, 130.5, 131.5, 132.0, 132.5, 134.0, 135.0, 136.5, 139.0. Five females, 127.0, 134.0, 138.0, 138.5, 142.0. By measurement, in which category do these birds belong? If some in each, where should the dividing line be drawn? Measurements of tail, culmen and tarsus show a similar range, but the different parts do not vary uniformly in the same direction.

As to differences in markings of upper parts and tail that are ascribed to adults of the eastern and western birds, I am unable to detect them in any degree. The supposedly less intense cinnamon of the dorsal spots in the young of the eastern bird I could not satisfactorily ascertain, due to a paucity of eastern specimens, but it is

variable in western birds. This is apparently an evanescent color, and it is most intense in northern birds taken soon after this plumage is acquired. The mottling on the inner web of the outer primary is an extremely variable feature. Of three birds shot at Atlin on May 13, 1934, feeding together about the same little pond, one has no trace of this mark, one has it faintly indicated, in one it is conspicuous and this, I think, is fairly indicative of its mode of occurrence throughout the west. According to Brewster (*loc. cit.*), it sometimes is seen in eastern birds.

From an analysis of the characters of six birds from Churchill, Manitoba, by Taverner (*Annals Carnegie Mus.*, 23, 1934, pp. 38-39), it appears that variability such as I have described occurs in the Solitary Sandpiper there, too, thus from the northwestern limit of its range east at least as far as Hudson Bay. That the explanation of this condition is that two distinct subspecies are found in this general region, and that the two migrate together through British Columbia and Alberta (Taverner, *loc. cit.*), I refuse to believe until breeding birds are collected that actually demonstrate segregation of the two during the nesting season. My Atlin series assuredly represents one taxonomic unit, and birds from within this series may be selected as representative of both described subspecies. The species does breed about Atlin, for though no nests were found, female birds were collected that contained partly formed eggs.

To summarize, I disbelieve in the existence of two distinguishable geographic subspecies of *Tringa solitaria*. There are certain variable features within the species, and possibly individual variation is more pronounced toward the west; but to pick out individual specimens on migration or in the winter home, specimens that show one character or another in special emphasis, and to label such birds as one subspecies or another is useless and misleading. For it does not tell where that bird came from, which is an important reason for attempting to recognize minor differences in the population of a migratory species.

There are features in the distribution and migration of *Tringa solitaria* in the west that I have not seen set forth, and that need to be considered in any such discussion as this. In the northwest it breeds from northern British Columbia, east of the Coast Range, north to the limit of timber. Details of distribution in British Columbia remain to be worked out. Though of regular occurrence in the Atlin region, I did not find it in summer in certain regions to the southward, in the valley of the upper Stikine River, or on the upper Skeena. It is not a coastal species. In southeastern Alaska there are only one or two occurrences known, and those of migrants at points where they might be explained as stragglers from the adjacent interior. It has not been found, I believe, upon the Queen Charlotte Islands or on Vancouver Island. In California it is almost unknown from the northern two-thirds of the state. It is a regular migrant in southern California, south of the Tehachapi Mountains, but there are almost no records or specimens from other points. The species is not included, for example, in Tyler's "Some Birds of the Fresno District, California," or in Grinnell and Wythe's "Directory to the Bird-life of the San Francisco Bay Region." Neither is it included in Jewett and Gabrielson's "Birds of the Portland Area, Oregon."

Migration from the extreme northwest tends southward, I think to the southeast, probably east of the Rocky Mountains. Manner of occurrence in southern California is suggestive of migration to and from some region to the northeast, a similar route to that traversed by the Mountain Plover. Any deductions drawn from the vague and complicated minor physical variations within a series of *Tringa*

*solitaria* should be correlated with geographic distribution and migration, and these latter features obviously are still imperfectly understood.

For further example, I have at hand four specimens from Patagonia, southeastern Arizona, taken, respectively, on August 29, August 31, September 10, and September 11, 1927. Two females show mottling on the outer primary, two males do not; on dorsal coloration all four would be classed as of the eastern subspecies. Measurements are non-conclusive. If, after balancing these several modifying features one way or another, I decide to affix to the specimens a subspecific term, *solitaria* or *cinnamomea*, what purpose is served? It seems to me, none at all. We have now had analyses of series of specimens from various western localities, notably by Taverner from Mount Logan, Alaska (Nat. Mus. Canada, Ann. Rep. for 1927 [1929], pp. 73-74), and from Churchill, Manitoba, previously cited. These series, as also my own from Atlin, all breeding birds, are subspecifically indeterminate, as anyone can see. I submit that subspecific names might be ignored for the time being. Analysis of a series of breeding birds from some one locality east of Hudson Bay might be illuminating.

As a matter of interest it may be recorded here that several Solitary Sandpipers collected about shallow ponds near Atlin in August, 1929, had their crops well filled with small fresh-water snails, swallowed whole. These snails have been identified by Dr. G. Dallas Hanna, California Academy of Sciences, as *Lymnaea vahlii* Beck.

#### FALCO COLUMBARIUS

A western subspecies of the Pigeon Hawk, entitled *Falco columbarius bendirei*, was named by H. Kirke Swann in 1922 (Bull. Brit. Orn. Club, 42, p. 66); type locality, Fort Walla Walla, Washington. In the eleven printed lines of description, comparison is mostly with *F. c. richardsonii*, which is unimportant. To differentiate the new form from typical *F. c. columbarius*, which is more to the point, we are told that the male of *bendirei* (adult or immature not stated) is lighter slate above and with tail bands that are "greyish white, instead of slate grey." I submit that as a contribution to the study of geographic variation this is sheer rubbish. And I protest against the inclusion of such a subspecies in standard works like "Peters' Check-list of Birds of the World" and the A. O. U. "Check-list of North American Birds" (in the latter case with an elaborately detailed "range"), without our being given any further confirmatory information. I am aware that the policy has been advocated of admitting to the "Check-list" any proposed name, however sketchily characterized, leaving to the future the more difficult task of confirmation or repudiation. This does not seem fair. Anyone who is really desirous of getting at the facts in such a case is put to the labor that the original describer was unwilling or incompetent to undertake. Also, it is far easier to obtain recognition for a foolish name than to have it discredited. In the case in hand, I have examined series of Pigeon Hawks wherever opportunity has offered without being able to substantiate the existence of a western race, *bendirei*; but the problem is not as simple as it at first appears.

There must be considered in this connection the status of *Falco columbarius* var. *Suckleyi* Ridgway (Bull. Essex Inst., 5, no. 12, Dec., 1873, p. 201), type locality Fort Steilacoom, Washington. There is no question here as to the existence of the ascribed characters, which are conspicuous enough, but there is great question as to the significance of those characters. *Suckleyi* was described, and has been regarded, as an extremely satisfying example of the darkening effect of the humid coastal

environment of the northwest, as another "saturated" local race. However, breeding birds are unknown from any point whatsoever, and, so far as I am aware, no specimens of *suckleyi* have been collected on the coast north of Vancouver Island. On the other hand, migrants have been collected east of the Coast Range the entire length of British Columbia. South-bound migrants collected by myself near Atlin, where the form is not uncommon, were taken such a short distance south of the Yukon Territory boundary as to make it obvious that *suckleyi* must breed in at least the upper portion of the Yukon drainage. In the Atlin region, *columbarius* and *suckleyi* occur in about equal numbers. Indeed, so far as I know, wherever *suckleyi* has been collected typical *columbarius* has been found as well. Do not these facts point toward the probability of the existence of two color phases of *Falco columbarius* in the northwest rather than of two geographic races? Is there, indeed, anything corroborative of geographic segregation of these forms?

As before remarked, I am unable to distinguish between eastern and western examples of *Falco columbarius* in normal plumage, but it may be desirable to recognize a northwestern subspecies on the same grounds as *Buteo borealis calurus*, that is, on the basis of a dimorphism that is prevalent over part of the species' range. For this subspecies the name *Falco columbarius suckleyi* is available, of course; *bendirei* should be ruled out in any event. But we are in need of understanding rather than of names.

Peters (*op. cit.*, p. 296) states that *suckleyi* breeds on Kodiak Island. The basis for this statement I do not know, but a breeding male at hand from Sitkalidak (an islet adjoining Kodiak) is typical *columbarius*.

#### VERMIVORA CELATA

The Orange-crowned Warbler occurs in this northwestern country as three distinct subspecies, illustrating in a satisfactory manner certain important features in distribution and migration. First, on the coast is *Vermivora celata lutescens*, of small size and bright greenish yellow color. This race, ranging from southern Alaska southward, is closely confined to the coast. In the Sitkan district it has been found only on the islands and on the narrow strip of mainland west of the Coast Range. Migration follows the coast. In the northern interior of British Columbia is the subspecies *Vermivora celata orestera* Oberholser (Auk, 22, 1905, p. 243; type locality, Willis, New Mexico). This race is not recognized in the A. O. U. Check-list, but I find it readily distinguishable. Compared with *V. c. celata* it averages slightly larger; in color it is decidedly more yellowish, and usually without a trace of the grayish tinge that is so apparent on the dorsum and head of *celata*. The eyelid is yellow; in *celata* it is gray. Compared with *lutescens*, *orestera* may be distinguished by greater size and darker, less yellowish color. All this was pointed out by Oberholser, in his original description (*loc. cit.*) and later (Auk, 34, 1917, p. 326). Oberholser had no material showing the occurrence of *orestera* farther north than southern British Columbia, but it is so common at Atlin as to make it seem likely that the range extends far down the Yukon drainage.

Much of the Atlin avifauna is derived from eastern North America, but there is included also an assemblage representative of the Great Basin, and *orestera* belongs in this latter aggregation. In migration it keeps strictly east of the Coast Range, just as *lutescens* keeps to the west. I have never taken a migrating *lutescens* in the Atlin region, nor a migrating *orestera* on the Alaskan coast.

The breeding *orestera* population leaves Atlin very promptly when the nesting

season is over, just at the advent of a migrating wave of another type of Orange-crowned Warbler. It was only by close and patient watchfulness that I was finally able to collect specimens of both at the same time and in comparable plumages. My latest date for *orestera* is August 28; the bulk of the population is gone by the end of July. The on-coming migrants are of the subspecies *V. celata celata*, arriving usually during the first week in August; last seen September 9. These birds are readily recognizable in life by the gray head. This migrating wave is, I think, from the northeast. Though *orestera* apparently travels due south from the summer home, never straying to the coast, stragglers from the south-bound wave of *celata* drift westward through the Coast Range, probably along such a highway as the Taku River. I collected specimens at Port Snettisham, Alaska, in August, 1909 (Univ. Calif. Publ. Zool., 7, 1911, p. 97).

What is still needed is field work in regions north and east of Atlin, to demonstrate the boundary between the summer homes of *orestera* and *celata*. I have seen a few Atlin specimens, spring migrants, that show a tendency toward *celata*, mostly in the increased grayish cast above. Probably the boundary line is not far distant. Specimens in collections from the Yukon drainage should be carefully examined with the above facts in mind.

Incidentally, nearly all records of *lutescens* from eastern Arizona really pertain to migrating *orestera*. I have seen only one or two typical *lutescens* from as far east as Tucson.

#### DENDROICA AESTIVA

With an accumulated series of twenty specimens (a few additional young birds) from Atlin, with about as many more from adjacent regions north and south, I find corroboration of my first impression that the Yellow Warbler of the northwestern interior is most nearly like the eastern *D. aestiva aestiva*. As between *aestiva*, *rubiginosa* and *brewsteri*, color and markings in the adult male seem to be the most reliable distinguishing features, perhaps the only ones. On the average, the Atlin birds and eastern birds show the same heavy chestnut ventral streaks, as compared with the much lighter markings of *brewsteri* and *rubiginosa*. Above, the northwestern birds do appear to be slightly more greenish, eastern birds a clearer yellow. It is just possible that the northern birds are representative of a middle-western race, to which there has been applied the name *Dendroica aestiva morcomi* Coale (Bull. Ridgway Orn. Club., no. 2, 1887, p. 82; type locality, Fort Bridger, Wyoming). But it is possible, too, that the observed color differences are due to different degrees of wear. The northern specimens at hand were all collected in June and later; the eastern specimens mostly in April and May. Birds from as far north as Forty-mile, Yukon Territory, and as far south as the upper Stikine River, are like Atlin specimens. I should regard this region (and probably much farther down the Yukon) as the northwestern extreme of the habitat of *Dendroica aestiva aestiva*. The migration route I feel sure is to and from the southeast, entirely east of the Rocky Mountains.

On the coast of southeastern Alaska, the Sitkan district, there is not much territory suitable to Yellow Warblers, and they are rare. Mostly they are found at river mouths along the mainland. This is the form to which the name *rubiginosa* has been applied; its affinities appear to be with *brewsteri*. It is slightly darker colored, above and below, but has the same characteristically sparse chestnut streaking on the breast. I have seen specimens from as far west as Prince William Sound; presumably it ranges westward at least as far as Kodiak Island. Locally it is known

to extend inland up the valley of the Skeena River as far as Hazelton. The migration route appears to adhere closely to the coast. In California there occur not uncommonly certain dark-colored immatures, south-bound, that are regarded as migrating *rubiginosa*. This may be correct, but at the same time there are at hand comparable immatures from southeastern Alaska that are not so markedly different from the same stage in *brewsteri*. Plumage changes in *Dendroica aestiva* due to season and age are not clear, and subspecific terms when based on other than adult males should be used with caution, at least as regards the three forms here commented upon.

California Academy of Sciences, San Francisco, April 19, 1935.

## A NEW RACE OF RUFFED GROUSE FROM VANCOUVER ISLAND

By H. B. CONOVER

A few months ago I received a shipment of eight specimens of Ruffed Grouse from Vancouver Island. They were first labeled as *Bonasa umbellus sabini*, but later, on comparing them with mainland specimens from the coastal regions of British Columbia, Washington and Oregon, the island birds were found to be very different.

*Bonasa umbellus sabini* was described by David Douglas in 1829 (Trans. Linnaean Soc., 16, p. 137). The type locality is given as "Coast of northwest America between the 40° and 49° parallels from Cape Mendocino to Vancouver Island." On page 62 of the "Journal Kept by David Douglas 1823-1827" (published under the direction of the Royal Horticultural Society, 1914), Douglas in a condensed account of his journal in his own handwriting speaks of spending the time from November 15, 1825, to March 20, 1826, at Fort Vancouver on the Columbia River. He also states (p. 153) that during that time he collected *Tetrao sabini* and *Tetrao richardsoni*, two pairs of the former being preserved, one male of which was destroyed by rats. I therefore suggest as a restricted type locality for *Bonasa umbellus sabini* (Douglas) the vicinity of Vancouver, Washington.

As Douglas did not visit Vancouver Island, at least not prior to 1829, according to his journals, the name *sabini* cannot be used for birds from that locality.

The new form may be known as

### *Bonasa umbellus brunescens*, new subspecies

*Type*.—From Comox, Comox District, Vancouver Island, British Columbia; no. 11,543, adult male, in the Conover Collection, Field Museum of Natural History. Collected October 28, 1934, by H. M. Laing.

*Characters*.—Differs from *B. u. sabini* in the much browner (less reddish) upper surface except the tail. In the red phase *brunescens* has the tail dull ochraceous umber instead of ferruginous as in *sabini*, and the black cross-barring beneath is not followed by a light ochraceous bar. In the gray phase, the tail is gray with no reddish coloration and it also lacks the double cross-barring of *sabini*.

Differs from both *B. u. umbelloides* and *B. u. yukonensis* in the much darker (browner) upper surface and by having the under surface much more buffy and more heavily barred with brown.

Differs from *B. u. togata* as follows: in the red phase the upper surface is much darker (browner, less reddish); the tail is dull ochraceous umber, less reddish, and lacks the lighter cross-bars beneath the black ones; in the gray phase the upper surface is darker, and the tail is less heavily barred with black; in both phases the under surface is much more heavily barred with brown, but the cross-bars are paler, and the light tip to the tail is much narrower.



Differs from *B. u. thayeri* (red phase) in the darker (brownier) upper surface, in the lack of lighter cross-bars underneath the black ones on the tail, and in the much narrower light tail tip; (gray phase) in the darker upper surface, in having the gray tail much less heavily barred with brownish black, and in the much narrower light tail tip. Underparts in both phases are buffier and more heavily barred with brown. Some *thayeri* approach *brunnescens* in this heavier barring.

Differs from *B. u. umbellus* in the darker (less reddish) upper surface. In the red phase the coloration of the tail approaches that of *umbellus* but is darker, and the light band just above the broad black one near the tip is buffy, not light gray. Also, the black cross-barring on the tail is not bordered below by a distinctly lighter red one as in *umbellus*. In the gray phase the tail is pure gray and also lacks the double cross-barring. On the under surface, *brunnescens* is much buffier and is banded much more heavily with pale brown.

*Description*.—Type, red phase: Above dark ochraceous brown finely mottled with dark gray. Top of head barred with black; mantle blotched with black, each feather with a reddish buff shaft streak; feathers of ruff blackish brown, glossed at tips with metallic green; scapulars brownish black with broad, pale buff shaft streaks on distal webs; wing coverts brown mottled with black and with narrow, pale buff shaft streaks; rump and upper tail coverts with indistinct median cordate spots of buffy white. Tail dull ochraceous umber, narrowly barred with black, crossed terminally with a narrow band of buffy ash, then a much broader one of black, and lastly another narrow one of buffy ash. Primaries and secondaries brown; outer webs of former blotched with light buff, and outer webs of latter mottled with ochraceous brown. Throat and foreneck buff, followed by a band of pale brown. Rest of underparts ochraceous with broad transverse bars of pale brown, edged above by narrow, dark brown line. Abdomen heavily barred with dark brown. Under tail coverts bright ochraceous umber, each feather with wide white spot at tip, edged above by narrow, dark brown line. Toes dull bluish olive gray. Iris brown. Upper mandible dark gray, lower mandible pale gray. Wing (flat) 190 mm., tail 144, culmen 16, tarsus 45, middle toe (with claw) 51.

Gray phase: Upper parts more heavily mottled with gray, giving a darker appearance; tail light gray. Under tail coverts white, edged with ochraceous and barred with dark brown.

*Range*.—Vancouver Island and small islands adjacent.

*Remarks*.—Of the three specimens from Saturna Island, one male (red phase) is typical of *brunnescens*; another male (gray phase) is fairly so, but a female (intermediate phase) is more reddish, tending toward the mainland birds.

Specimens from British Columbia, south of 51°, do not appear to be exactly typical of any race. East of the Fraser River they are closest to *umbelloides* but have a sheen like gun metal on the upper parts which makes them darker gray, compared with Alberta birds. Three specimens from farther north, in the Cariboo District, however, are typical. Strange to say, three birds from just south of the international boundary in eastern Washington (Loomis, Sullivan Lake, Curlew) do not have the dark coloration of the southern British Columbian birds.

To the west of the Fraser River, on the mainland, the birds are closest to *sabini* but are in general darker (mahogany red) than specimens from northern Oregon and southern Washington. Ruffed grouse from northwestern Washington, about Puget Sound and the international boundary, also have a tendency to be darker than true *sabini*. There is much variation in this region, gray-tailed birds being fairly common.

During this investigation something over two hundred and forty specimens were examined. I am indebted to the following for the loan of material: Biological Survey, Carnegie Museum, Chicago Academy of Sciences, Museum of Comparative Zoology, Field Museum, University of Michigan, University of Toronto, United States National Museum, and Mr. James H. Fleming.

#### SPECIMENS EXAMINED

*B. u. umbellus*.—Pennsylvania 14 (Bryn Mawr, Moscow, Tioga County, Lycoming, Driftwood, Clinton County, McKean County, Cameron County); Tennessee 1 (Mount Leconte); North Carolina 2 (Weaverville); New York 2 (Long Island); Connecticut



3 (East Hartford, Windham County); Massachusetts 5 (Barnstable County, Dedham, Wakefield, Concord); Indiana 1 (Rose Lawn); Illinois 3 (Warsaw, Evanston, Kane County); Michigan 13 (Ann Arbor, Jackson County, Wastenaw County, Kalamazoo, Darry County, Livingston County, Oakland County); Wisconsin 1 (Beaver Dam); Ontario 17 (St. Clair Flats, Niagara Falls, Liewry, Norfolk County, Middlesex, Brant County, Wentworth County, Toronto, York County, Simcoe County).

*B. u. togata*.—Maine 3 (Penobscot County, Aroostook County); Wisconsin 6 (Phillips, Woodruff, Drummond, Solon Springs); Michigan 2 (Iron County); Minnesota 1 (Cook County); Quebec 5 (St. Louise, Atalante, Levis); Ontario 12 (Arden, Muskoka, Thunder Bay County, Coppermine Point, Lake Nipigon).

*B. u. thayeri*.—Nova Scotia 7 (Digby, Dartmouth, Halifax); New Brunswick 1 (St. Stephens).

*B. u. umbelloides*.—North Dakota 4 (Grafton); Utah 3 (Weber County, Elder County); Manitoba 2 (Carman); Saskatchewan 1 (Prince Albert); Alberta 6 (Hay Lake, Edmonton, Fawcett); Washington 15 (Danville, Curlew, Blue Mountains, Calispel Lake, Sullivan Lake, Tunk Mountains, Oroville, Mazama, Gifford, Colville, Loomis, Entiat, Mount Stewart); British Columbia 21 (Similkameen River, Okanagan Landing, Okanagan, Vernon, Coldstream, Lumby, Mabel Lake, Kootenai Range, Cottonwood, Willow River, Cariboo, Fort St. James).

*B. u. yukonensis*.—Yukon Territory 3 (Teslin River, Lake La Barge); Alaska 1 (Russian Mission).

*B. u. sabini*.—Oregon 25 (Scio, Cascade Mountains, Logan, Fort Steilacoom, Parkdale, Willamette Valley, Portland, Beaverton, Blaine, Tillamook); Washington 25 (White Salmon, Shoalwater Bay, Mount Rainier, Cedarville, Kirkland, Nisqually River, Darrington, Olympic Mountains, Puget Sound, Rockport, Bellingham, Whatcom County, Glacier, Whidby Island, Clallam Bay, Neah Bay); British Columbia 17 (Howe Sound, New Westminster, Lund, Vancouver, Port Simpson, Upper Pitt River, Agassiz, Sumas, Chilliwack).

*B. u. brunnescens*.—Vancouver Island 8 (Comox); Saturna Island 3.

Chicago, Illinois, May 9, 1935.

## A NEW SPECIES OF EAGLE FROM A QUATERNARY CAVE DEPOSIT IN EASTERN NEVADA

WITH ONE ILLUSTRATION

By HILDEGARDE HOWARD

Through the courtesy of the Southwest Museum and the California Institute of Technology, I have been privileged to study the bird remains from Smith Creek Cave, a limestone cave near Baker, Nevada. A general account of the excavations during July and August, 1934, has been written by M. R. Harrington (Masterkey, 8, 1934, pp. 165-169), leader of the expedition during which the field work was done, and does not need to be repeated here.

This cave deposit, like the many others of its kind which have come to light within the last few years, is questionably Pleistocene. The Pleistocene horse is present and, among the birds, two species described originally from the Pleistocene of Rancho La Brea. These are *Fultur clarki* (Miller) which has never before been recorded outside of California, and *Coragyps occidentalis* (Miller), known also from Conkling Cavern in New Mexico. It has been remarked before that the presence of *Coragyps* in any great numbers, contrasted with an absence or scant representation of *Cathartes*, is indicative of the Pleistocene. However, in this case, though

*Cathartes* is absent, *Coragyps* is represented by a single fragmentary tarsometatarsus, so that its presence, though important, is not as instructive as might be desired.

A third extinct species of bird occurs in this deposit. This is a large eagle which does not agree with any other species, living or extinct, with which I have been able to compare it. Unfortunately, it is represented with certainty only by the distal end of the tarsometatarsus. A nearly complete femur, a fragmentary proximal end of the tibiotarsus and several phalanges of eagles are also found, but it is probable that at least the femur and one of the phalanges are of *Aquila chrysaetos*. The tibiotarsus appears too large for *Aquila* and likely may belong to the different eagle in question; however, it is too fragmentary to furnish any definite information about the species.

The most marked characteristics of the tarsometatarsus are its large size and conspicuous facet for metatarsal I. The size is suggestive of *Thrasaëtus harpyia*, though upon comparison it does not quite equal this form in breadth of distal end and is not so heavily built nor so rugose. Comparisons were made also with *Pithecophaga jefferyi*; the breadth across the trochleae in the specimen of *Pithecophaga* examined does not equal that of the cave bone, but the general build of the bone is similar. However, detailed characters indicate no real relationship of the two forms.

Other species compared were *Haliaeëtus leucocephalus*, *H. albicilla*, *Thalassoaëtus pelagicus*, *Neogyps errans*, *Morphnus woodwardi*, *Morphnus guianensis* (cast), *Buteo* (*Geranoaëtus*) *melanoleucus*, *B. borealis*, *Urubitinga fragilis*, *Aquila chrysaetos*, *Spizaëtus grinnelli*, and *S. ornatus*. For the opportunity to examine specimens of many of these species I am indebted to the American Museum of Natural History, to Dr. A. Wetmore and the United States National Museum, to Dr. Loye Miller, and to Mr. A. J. van Rossem, in charge of the Donald Dickey collection.

After a careful comparison of the cave tarsometatarsus with these forms, it appears that the nearest relationship is to be found with *Spizaëtus* and *Aquila*, with the balance in favor of the former. I have noted in previous studies that *Aquila* and *Spizaëtus* have many characters in common, and for that reason I have used the subfamily term, Aquilinae, in discussing them in an earlier paper (Howard, Carnegie Institution of Washington, Publ. 429). The tarsus under consideration apparently belongs to this subfamily and is sufficiently close to *Spizaëtus* to warrant placing it in that genus. The only living species of *Spizaëtus* which attains a size large enough to agree with the cave specimen is *S. bellicosus* of South Africa. The chances of identity of the Nevada species and the living South African bird are remote. The cave bird is therefore here described as

#### *Spizaëtus willetti*, new species

*Type*.—Distal end of tarsometatarsus, slightly broken at edges of internal and external trochleae. Specimen no. 1791, collection of California Institute of Technology; collected by M. R. Harrington; trench 5, depth 2 to 4 feet, Smith Creek Cave (loc. 251), 34 miles north of Baker, White Pine County, Nevada; Quaternary age.

*Description*.—Most striking characters are large size and conspicuous facet for metatarsal I, which is placed high above distal end. Detailed characters follow:

- (1) Arching of trochleae similar to *Spizaëtus* (well-arched, but less markedly so than in *Aquila*).
- (2) Distal contour of trochlea for digit 2, in both lateral and distal aspects, nearly straight, having only a very gentle curve as viewed distally (closest to *Spizaëtus ornatus* in this respect; *S. grinnelli* and *Aquila* slightly indented near the tip).
- (3) Median trochlea with external edge noticeably more developed antero-posteriorly than internal edge (this is true of both *Spizaëtus* and *Aquila*).
- (4) External ridge of trochlea for digit 4 projecting as a slender flange well

posterior to the internal ridge (development of external ridge varies in the different species examined, from the short stubby form in *M. woodwardi* and *Thrasaëtus* to the long slender type, similar to the fossil, found in *Aquila* and *Spizaëtus*).

(5) Shaft narrowing slightly above trochleae (closest to *Spizaëtus*; *Aquila* narrowing decidedly).

(6) Facet for metatarsal I located high on shaft, facing more laterally than is the case in other species examined; facet long and, although not hollowed as in *Thrasaëtus*, is so excavated as to cause a noticeable indentation in outline of internal



Fig. 40. Tarsometatarsus of *Spizaëtus willetti*, Calif. Inst. Tech. coll. no. 1791. Type specimen, natural size: a, anterior view; b, distal view; c, posterior view.

Photograph by H. Wm. Menke, retouched by John L. Ridgway.

edge of shaft as seen in posterior view. High position of facet relative to breadth of distal end agrees with certain specimens of *Thrasaëtus*, *Pitheophaga*, and *Spizaëtus*. There is some variation in this ratio within a species, enough so that it might be possible to include *Aquila* in the list. However, in such forms as *Haliaeëtus leucocephalus* and *H. albicilla*, *Thalassoaëtus pelagicus*, *Morphnus woodwardi* and *Buteo melanoleucus* the facet is definitely lower in position.

(7) Tendinal groove on anterior face wide and clearly marked, though not sharply edged, the shaft rounding away from it gradually on external side. Although the character of the groove itself is similar to *Spizaëtus*, the rounded edge of the shaft is not duplicated in any specimen at hand. Unfortunately the bone is broken away on this side, so that its exact contour is lost.

(8) Anterior surface of shaft, on internal slope, slightly concave and devoid of ridges (*Spizaëtus* closest in this regard, but appears a little more rugose toward internal edge).

(9) Contour of internal edge of shaft, above facet for metatarsal I, slightly concave, the shaft curving outward at point where bone is broken, thus precluding possibility of bone being of long, straight type such as found in *Morphnus woodwardi* or *Buteo*; shape more on the order of *Haliaeëtus*, *Aquila* or *Spizaëtus*, though not identical with any of them.

(10) In posterior view, internal edge of shaft, above metatarsal facet, rounding posteriorly to slightly overhang posterior face of shaft, as in *Aquila* and *Spizaëtus*; other forms vary from a curved, though not overhanging, edge, as in *Buteo*, to the flaring type found in *Thrasaëtus* and *Pitheophaga*.

*Measurements.*—Greatest breadth of distal end, approximately 28.5 mm.; breadth of distal end across anterior edge of trochleae, 23.2; height of metatarsal facet, 40.0; depth of external ridge of middle trochlea, 13.0; depth of internal ridge of middle trochlea, 11.3; breadth of shaft at distal foramen, 18.2.

The species name is chosen in honor of Mr. George Willett, ornithologist of the Los Angeles Museum, whose interest and assistance not only in the matter of the specimen at hand, but in the many problems that beset the comparative osteologist, have been deeply appreciated.

*Los Angeles Museum, Los Angeles, California, March 8, 1935.*

## FROM FIELD AND STUDY

**Nesting of the Williamson Sapsucker.**—On the bright sunny day of May 15, 1934, I made a trip along the Glacier Point road in Yosemite hoping for a visit with the Williamson Sapsuckers. I told Ray Driver, who was my companion for the day, that the sapsuckers could be seen without getting out of the car. However, Ray was quite willing to get out of the car to see one of these showy woodpeckers and so at an altitude of 7,000 feet where a little mountain meadow was an island of green surrounded and walled in by a stand of lodge-pole pines, we stopped the car and went to investigate one of the ancestral nesting trees.

Again, this year, the birds had decided to build in the old home tree. There were fresh chips on the ground at the base of the tree and a fresh-cut, round hole, but there was no response to our knock. Too early, we thought, for incubating birds. We circled around through the woods and soon found another fresh-cut hole. Here in answer to our knock there came the sound of squeally young voices and a Hairy Woodpecker head appeared at the entrance. We left this family in peace and continued our stroll.

Soon we had located the third fresh nest hole, and as we approached, a dark head was seen to duck down into the dark hole. We moved cautiously up to the base of the tree; nothing happened; then we tapped on the tree trunk; still nothing happened. But pounding more vigorously with a stone brought results. A head was cautiously thrust forth and looking up I could see the gleaming red throat patch of a male Williamson Sapsucker (*Sphyrapicus thyroideus*). We looked at each other for nearly a minute and then the sapsucker slowly squeezed out of the hole. The bird was just about seven feet above my head, and looking up I had a grand view of his very yellow belly as he slowly slid out of the hole. He circled, lifted, and came to perch on a limb of the nest tree. Then he moved to the main trunk and hitched upward. When well up toward the top of the tree, fifty feet above the ground, he shouted his hawk-like scream.

While we put up the camera the sapsucker moved about through the neighboring lodge-pole pines, often coming back to his home tree. In fifty-five minutes he came hitching down the trunk to the nest hole. He cocked his head from side to side and gazed into the hole, but did not enter. In less than a minute he was away again in the tree tops. He sounded his harsh call several times. Seemingly in answer to his call the female appeared. This was the first we had seen of the female. The female examined the nest hole, flew up on a branch and uttered a series of low notes. The male joined her, alighting a foot away and uttering a series of low chuckling notes. While giving these notes he strutted along the limb with wing-tips and tail jerking rapidly. As he approached his mate she crouched low on the limb and the mating act was accomplished. The act lasted several seconds before the birds separated to perch side by side on a limb. After a minute or so the female flew off through the woods and the male went into the nest hole. In about five minutes the female came to the nest hole and again uttered her soft coaxing notes. The male came out of the hole and both birds flew to a limb where again the mating act was consummated. The male returned to the nest. In our two-hour watch the female only went to the nest hole to call the mate out.

On May 31 the Williamson Sapsuckers were evidently incubating, for on this date the only activity about the nest site was when the birds changed places. We saw the male bird come out of the hole and the female go in. There was no sound of young voices.

On June 17 we again visited the home tree of the Williamson Sapsuckers. When we arrived, about ten o'clock, both parent birds were bringing food. We watched the birds for an hour and a half and in this period of time the male made nine trips to the nest hole and the female made seven trips. The young were small, as the parent birds went completely into the nest hole. The birds, male and female, always came onto the tree trunk above the nest hole and hitched jerkily downward until on a level with the hole. They landed anywhere between five and fifteen feet above the hole; the female was likely to land nearest to the hole. If an auto happened to be passing when the sapsucker was hitching down, the bird would quickly dodge around the tree; but the mere passing of an auto never caused either of the birds to leave their tree.

About every other trip excrement was carried from the nest. When the male cleaned nest he carried the feces away and dropped them some distance from the nest. When the female cleaned nest she came to the entrance from within, looked about and then dropped the refuse before leaving the nest hole. Directly under the nest hole there was a litter of droppings and we thought as we examined the droppings that such untidiness under a nest hole might thenceforth indicate to us that the occupants of a site were Williamson Sapsuckers, inasmuch as all other woodpeckers we have known are particular to carry the refuse far from the nest tree.

Occasionally the parent birds would arrive at the nest hole simultaneously, or nearly so, and in such case the male would always hold back and allow the female the right of way. When the sapsuckers met at the nest site they exchanged greetings in a "rubber doll" tone of voice. This nasal quaver of notes was reminding of a call often sounded by the Red-breasted Sapsucker. Another call that was occasionally shouted from the tree-tops was shrill and like that of a Red-tailed Hawk.

On this same day (June 17) we discovered another pair of Williamson Sapsuckers feeding young. The nest hole was about thirty-five feet above the ground in a dead white fir. This was the first time we ever found Williamsons nesting in anything but lodge-pole pines. However, this tree was evidently also an ancestral home tree as there were six old holes. Again the birds of this pair employed the unique habit of hitching down to the nest hole instead of up as most woodpeckers do. Also there was the litter of droppings under the nest.—CHAS. W. MICHAEL, Yosemite, California, June 19, 1934.

**Observations on a Captive Pygmy Owl.**—During a field trip in Monterey County, California, in 1933, one of these small diurnal owls (*Glaucidium gnoma grinnelli*) was captured and, from May 31 to June 8, was kept in captivity. The bird seemed tractable and was never aggressive toward us. His most vigorous reaction to our presence consisted in clicking the mandibles together. At no time did he make any attempt to defend himself either with the rather formidable claws or beak. The owl was always alert and followed every movement near his cage with his sharp, piercing gaze.

We supplied our captive with fresh-killed *Peromyscus* twice daily; usually two at a time were pushed head foremost about half way through the screen of the cage. The bird showed no apparent reaction to food as long as anyone remained within range of his vision; but if one of us returned within a few minutes after feeding time, one of the mice would be found clutched in the feet of the owl and almost hidden from sight by the bird's breast feathers. On one occasion a mouse was pushed directly in front of the owl, whereupon he promptly seized and held it firmly, but made no further move. Before starting to eat, the bird always placed its prey in a natural position, with back uppermost, and tail and body extended in a straight line. The first portion of the mouse to be eaten was always the brain, which was followed by the contents of the abdominal cavity, and then by those of the thoracic cavity, and finally by the remainder of the body. The only parts not swallowed were scattered bits of skin. The mice were not skinned, although skin was torn

off and eaten toward the last of the meal. One mouse was completely finished before the other was eaten. Approximately five hours following a meal, one or two pellets would be disgorged. These pellets were about half an inch in length and half as broad.

At no time during his captivity did the bird utter any sound. During the daytime, we never heard a sound from the cage unless we startled its occupant; but at night he invariably made two sustained attempts to escape, one occurring about 10:00 p.m., following our own cessation of activities, and the other at about 4:00 a.m. Each of these lasted about an hour.

An experiment to determine the eye-shine gave negative results. This is in accord with the findings of van Rossem (Condor, 29, 1927, p. 26) on another member of the same genus, *G. brazilianum ridgwayi*.

The mask-like character of the color pattern on the nape and hind neck of the owl was a striking feature of the living bird and bore a marked resemblance to the appearance of the real face.—CLARENCE F. SMITH, *Museum of Vertebrate Zoology, Berkeley, California, May 15, 1935.*

**On the Drinking Habits of Gallinaceous Young.**—In late June, 1930, at Jackson, Michigan, I came into possession of a set of ten Prairie Chicken eggs, partially incubated, through the nest having been run over by a mowing machine. This nest was situated in the middle of a fourteen-acre hay field of mixed clover, timothy and alfalfa, about a quarter of a mile from the booming ground that has been used by the males for some years. I placed the eggs in an incubator containing turkey eggs and on July 6 nine of them hatched, the tenth embryo dying after pipping the shell. The next year (1931) I obtained six eggs from the disturbed nest of a Ring-necked Pheasant. All the eggs hatched on May 8.

For some years I had been interested in the problem of the drinking habits of birds. I therefore carried out a few simple experiments with these broods of chicks, to see what instinctive drinking habits, if any, they might exhibit. I placed small shallow pans of water in front of the chicks, but they gave no response. I elevated the pans of water, finally placing the pans on a level with the eyes. The chicks seemed not to recognize the water. When the water was upon the floor, they even walked through it without visible reaction. However, a chick often picked at its toes and apparently water entered the bill, for it sometimes lifted its head in the drinking act.

I placed particles of food in the water. The chicks sometimes picked at the particles, and occasionally this was followed by the drinking act. Removal of the particles resulted in a loss of all interest.

I tried to dip the bill in the water, and while the chick went through the drinking act after the immersion, it never drank of its own accord.

The next process tried was to fill a pipette half full of water and insert it in the box, holding it near the chicks. They showed no more apparent concern than for any other object similarly placed before them. I then squeezed the pipette, causing a drop of water to appear at the open end. The chicks instantly showed great excitement and clustered around the pipette, picking at the water. Each time a chick picked the drop (which I maintained by continued pressure upon the bulb), it went through the drinking act. I released the pressure on the bulb and the chicks became quiet upon the disappearance of the drop. The formation of another drop resulted in a commotion as before. I found that alternate appearance and disappearance of the drop resulted in the same set of reactions—interest and excitement followed by quiescence.

I raised and lowered the pipette to determine if elevation influenced the recognition. The chicks did not respond to a drop lower than half the distance from the eye to the floor nor when higher than the normal reach of the bill. I repeated the experiments several times from shortly after hatching until they were nine days old. In all cases they failed to recognize a water surface although they were stimulated by a drop of water at the end of a pipette.

A drop of water at the end of a pipette is a good simulation of a dew drop that glistens in the sunlight. The behavior of the chicks leads me to think that dew drops form an early, instinctively sought source of water. The presence or absence of dew



may be a potent factor in gallinaceous well-being. Drinking from surface water, as pools, may be a secondary, learned source of supply.

The problem of water supply, especially in the young, is one of the most important to birds. Animal food, the staple food for the young of seed-eaters, may be more than a source of concentrated nutrition. It may be fed the young, not because of its superior food value, but as a source of moisture. Dew and water of exudation may serve to furnish the remainder of the necessary water for precocial birds and as such be a vital determinant of the success of the family.—LEONARD WILLIAM WING, *University of Wisconsin, Madison, Wisconsin, March 28, 1935.*

**A Whistling Swan Visits Death Valley.**—On December 5, 1934, Adrey Borell, Donald Curry, and the writer found a lone Whistling Swan (*Cygnus columbianus*) at the old Eagle Borax Works, which is below sea level in Death Valley, California. By remaining flat on my stomach, I crawled up gradually until I was within fifty feet of the swan. It fed with its head down, in a small brackish pool, digging into the black mud with vigorous strokes for the underwater stems of a water weed.



Fig. 41. Whistling Swan in flight over ruins of old Eagle Borax Works, Telescope Peak in background, Death Valley, California.

Wildlife Division negative no. 4136.

The swan, which was clearly an immature bird, spied me as I arose slowly to a sitting position in order that I might obtain a photograph. It then flew a short distance out into the center of the pond. Upon being approached, the swan took off easily against a stiff north wind and circled over the ruins of the old Eagle Borax Works, giving me a chance to secure a photograph (fig. 41) which not only serves to identify the bird as a swan but also identifies the locality.—JOSEPH S. DIXON, *Wildlife Division, National Park Service, Berkeley, California, February 11, 1935.*

**The Man-o'-war-bird off the Oregon Coast.**—On the morning of February 18, 1935, a strange bird was seen soaring over the east end of Tillamook Rock, an isolated islet



one and one-quarter miles off the Clatsop County, Oregon, shore line. On this rock is located an important lighthouse with a permanent crew maintained by the U. S. Lighthouse Service. Hugo Hanson and Werner Storm, assistant keepers of the light, told me this interesting story.

"From the time we first discovered the bird until nearly sundown, he had never alighted on land or sea, but swung slowly back and forth and from side to side without ever moving his enormous wings. About 5:30 in the afternoon the bird started to look for a roost but had some difficulty in selecting a place to his liking as he would almost settle, then as if reconsidering he would rise and cast about for a more suitable perch among the jagged rocks comprising the lower level. Finally he came to rest on a small iron tripod, part of the derrick that was carried away during the recent storm, and after much folding and refolding of those amazing pinions he settled down for the night. Something caused him to leave his low roost during the night, as one of the keepers while on night watch noticed him tottering in the breeze asleep on the large cable from the top of the derrick mast to the end of the boom far above the rock. Upon looking for him next morning we scanned the sky in vain and decided that he had departed in search of his home or of more comfortable surroundings; but when Mr. Hanson went down to do some work on the steam hoist he discovered our friend huddled at the base of the derrick fast asleep in the everlasting rest."

After the bird died, as described above, Mr. Hanson skinned the specimen and it was presented to me, proving to be of the species *Fregata magnificens*. The sex was not determined. This is the first reported occurrence of this southern species as far north as the Oregon coast, and it constitutes the first authentic record of a *Fregata* for the state of Oregon.—STANLEY G. JEWETT, Portland, Oregon, March 12, 1935.

**The Rosy Finch in Saskatchewan.**—The Gray-crowned Rosy Finch (*Leucosticte tephrocotis*) is a somewhat irregular winter visitant to Saskatchewan, appearing generally about the beginning of November and staying until the end of March. Breeding as it does in the Rocky Mountains at an altitude of 7000 feet, and descending to the plains in winter, it furnishes an interesting example of altitudinal migration.

The species was first recorded by the writer on November 8, 1912, when two birds were seen. For some years no more were noted, except at rare intervals in very cold stormy weather, or when no collecting was possible, and it was not until November 27, 1921, that the first specimen was taken. This was a male bird, feeding in company with some redpolls around a flax strawpile on this ranch. On January 19, 1922, two other birds were secured at a near-by ranch; and on March 18 two more, evidently a pair, were shot here. Although the taking of these specimens was considered necessary in order to establish the Rosy Finch as a Saskatchewan bird, it is interesting to note that a specimen was taken near the forks of the Saskatchewan River, in what is now central Saskatchewan, in May, 1827, which is prior to the writer's record by nearly one hundred years; also that there are two or three records from Manitoba, one at Birtle in 1891 (Macoun, J., and Macoun, J. M., Catalogue of Canadian Birds, 1909, p. 465). Doubtless it is merely owing to lack of observers that the Rosy Finch was not recorded in southern Saskatchewan long ago.

All the foregoing records refer to the type race (*L. t. tephrocotis*) which, as Taverner (Birds of Western Canada, 1926, p. 279) states, is the bird to be expected on the plains. But according to Aretas Saunders (Pac. Coast Avifauna No. 14, 1921, p. 110) the Heppburn Rosy Finch (*L. t. littoralis*) also is to be found in that state; and for several years the writer has endeavored to establish the presence of that subspecies in this section. It is also worthy of note in this connection that the one record of a Rosy Finch in Minnesota is for *littoralis*, not *tephrocotis*.

In 1933 Mr. Spencer Pearse, a neighboring rancher, informed me that he had observed in his yard on February 3 about a dozen unfamiliar birds which he identified as Heppburn Rosy Finches, but not realizing the importance of his discovery he failed to secure a specimen; however, later on, on March 1, he shot a male, sending it to the Provincial Museum.

The winter of 1933-34 proved to be a good rosy finch winter, several flocks

appearing at intervals, usually after a storm. On February 21, 1934, while the writer was standing in the entrance of the local grain elevator he saw a solitary Hepburn almost at his feet, picking up waste wheat. On March 9, some forty finches visited our hay stacks, and from these, five specimens were collected, three *tephrocotis* and two *littoralis*. It is likely that in any good-sized flock there will be found a sprinkling of the latter kind.—LAURENCE B. POTTER, Gower Ranch, Eastend, Saskatchewan, Canada, April 4, 1935.

**Nesting Colonies of the Herring Gull in British Columbia.**—Recent authors have recorded the Herring Gull (*Larus argentatus smithsonianus*) as nesting at Atlin Lake (59° N, 123° W), in the extreme northwest, and at Babine Lake (54° N, 126° W), in the central part of the Province. So far as I know, these are the only published nesting records for British Columbia. The first of these, reported by E. M. Anderson (Rep. Provincial Museum Nat. Hist. for 1914 [1915], p. 9), has

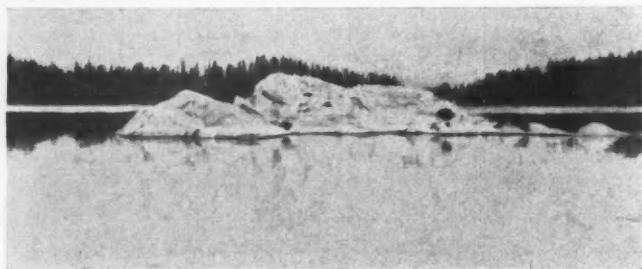


Fig. 42. Nesting site of Herring Gulls on islet in Bridge Lake, British Columbia.

been substantiated by Allan Brooks and R. M. Stewart, both of whom have visited the nesting colony which is situated on an island close to the village at Atlin. The record for Babine Lake is based on less satisfactory evidence. The reference apparently was first published by Cooke (U. S. Dept. Agr., Bull. 292, 1915, p. 36). Miss M. T. Cooke, Bureau of Biological Survey, Washington, D. C., informs me that the statement is based on a record by E. A. Preble (MS 1903, Bureau of Biological Survey, Washington, D. C.) which reads as follows: "A few Herring Gulls were seen daily near the outlet of Babine Lake, August 17 to 19. A native told me that they nest in small numbers on Babine River a few miles below the lake, as well as on certain islands in Babine Lake."

The purpose of this paper is to describe a Herring Gull colony located on Bridge Lake (51° N, 120° W), approximately 200 miles south and 200 miles east of Babine Lake, which I visited on July 26, 1933. Local residents report that this colony has existed for many years.

Bridge Lake, four and one-half miles long and a mile and a half wide, is one of a number of deep-water lakes which occupy a well wooded and picturesque plateau in one of the less frequented regions of the Cariboo District. The zonal association is predominantly Canadian. A forest of lodge-pole pine, Douglas fir and black spruce intermixed with trembling aspen extends to a shore-line growth of willow, birch and alder. Here and there, particularly on the south and east, trembling aspen occurs in clear stands of tall, slim, white-barked specimens. The shores are rocky and in some places steep. There are twenty-six islands in the lake, ranging in extent from a few square yards to one of approximately 180 acres. The islands are well timbered, with one exception noted below; even the smallest support some tree growth. The lake shore is irregular, with deep bays and long peninsulas so that it is not possible from any one place on the shore to see the lake as a whole nor to distinguish always between mainland and island. The waters are not very

productive of plant life or invertebrates. Some of the bays are shallow but support little aquatic vegetation, this chiefly *Potamogeton perfoliatus*. Only one stand of tules was observed, a sparse growth on a submerged reef close to the west shore measuring approximately 10 by 150 feet. Two kinds of molluscs were collected.

Local residents report the presence of the following fishes: Kamloops trout, lake char, ling, squawfish and two species of sucker. Remains of lake shiners were found in gull pellets.

Fifteen pairs of gulls were nesting on Stack Rocks, an island of gray and white granitic rock situated some 250 yards from the east shore of the lake. Except for one small clump of sedge this island was bare of vegetation, and it is the only one of its kind in the lake. The measurements, at the water level obtaining on July 26, 1933, were 65 feet by 30 feet. The height at the highest point was 6 feet.

As I approached the island all the adult gulls flew out and circled over the advancing boat, so that it was a simple matter to make an exact count. As the boat drew nearer to the island the young birds, numbering twelve, swam out from the rocks. These twelve young birds, apparently all that had survived, were one-quarter to one-half grown. An adult female and a half-grown female were collected and preserved. The former is in worn plumage, the white tips to the primaries largely disintegrated.

The nests, of which twigs formed the chief constituent, had been built in rock crevices, and all but one had degenerated to shapeless masses of debris mixed with an accumulation of fish-bones and other litter. The nest which had remained intact was well made of twigs, chiefly spruce, lined with moss.

On May 15, 1934, the island was visited by Mr. F. M. Bell, a local rancher, who informed me that on that date there were fifteen nests, six with three eggs each, six with one egg each, and three empty. Mr. Bell counted thirty-three gulls. He mentions also that the first gull for the season was seen on April 15 and that the ice went out of Bridge Lake on April 26.

In order to learn something of the food habits of this colony the island was searched carefully for pellets and other food remains, with rather meager results. A number of fish skulls and vertebrae were identified as belonging to suckers. These and four regurgitated pellets were the only materials collected. One pellet contained bones and abraded feathers of a passerine bird; two contained bones, including pharyngeal teeth of lake shiner (*Richardsonius balteatus*), together with fragments of moss and vegetable debris; one contained abdominal segments and other hard parts of *Dytiscus* larvae representing at least eleven individuals.

Acknowledgment is made to Professor J. R. Dymond, Royal Ontario Museum of Zoology, Toronto, Ontario, for determination of large fish bones, and to Dr. W. A. Clemens, Director of the Pacific Biological Station, Nanaimo, British Columbia, for cooperation in the study of material composing regurgitated pellets.—J. A. MUNRO, Okanagan Landing, B. C., Canada, August 14, 1934.

**A New Name for the Large-billed Hawk of Western Costa Rica and Panama.**—Transfer of the tropical American hawks formerly included in the genus *Rupornis* to the genus *Buteo* (Peters, Birds of the World, 1, 1931, p. 228, and van Rossem, Bull. Mus. Comp. Zool., 77, Dec., 1934, p. 429) makes necessary a new name for *Buteo magnirostris ruficauda* (Sclater and Salvin) [*Asturina ruficauda* Sclater and Salvin, Proc. Zool. Soc., 1869, p. 133]. The subspecific name is preoccupied by *Accipiter ruficaudus* Vieillot (Ois. d'Amér. Sept., 1, 1807, pl. 14), a synonym of *Buteo borealis borealis* (Gmelin). I therefore propose as a substitute: *Buteo magnirostris petulans*, nom. nov.—A. J. VAN ROSSEM, San Diego Society of Natural History, San Diego, California, April 3, 1935.

**Variability in Size of Gulls.**—Gulls are notoriously variable in size. This is particularly true of the larger and especially of the more maritime species. The Glaucous Gull shows it in extreme measure, but it is also strongly evident in the Herring, Glaucous-winged, Black-backed and others. It is less marked in the smaller inland and land-feeding species such as the Bonaparte and Franklin gulls.

It seems reasonable to suppose that this great difference in size of individuals of certain species may be largely due to, or emphasized by, variations in food supply

during early or adolescent stages of growth. Marine gulls, scavengers, beach-combers and surface feeders, are particularly dependent on weather conditions, especially wind, in their food gathering. During stormy weather surface life descends to greater depths and heavy surf beaten shores do not make good gleaning grounds. Gulls often show great concentrations and high excitement over surface water disturbances such as tide rips and heavy surf, yet it is doubtful if effort under such circumstances is always as profitable as over quieter waters.

If during a critical period of growth of nestlings an insufficiency of food prevails, the chicks may well receive a check to development for which no subsequent abundance will compensate. This seems true of live-stock and there is no reason to suppose that it would not be true of gulls. Nesting seasons are often unpropitious. Successions of bad weather lasting several days may follow one another and spells of a week or more of wind and storm are not unusual at such seasons. These occurrences must often cover most of the nest life of gull chicks, involve their most critical growing period just as they are ripening off into maturity, and produce a number of undersized adults.

Such under-development might not be equally marked in all of a numerous brood. Parent birds do not usually apportion food to their neediest offspring. They usually either dump it down for the young to fight over or else give it to the most vigorously insistent. In either case, in times of food shortage, the strongest and most aggressive are likely to get more than their fair share and the weaker ones less or even nothing. The general rule of the nest is that the strongest gets all it wants while the others snatch what they can. If anything remains after the strongest is satisfied the next strongest gets its innings and so on down the line. If there is not enough to go around the weakest goes without. Thus progressively the strong become stronger and the weak weaker; the former tend toward complete prosperity, the latter toward extinction. The final result, probably, is to raise to maturity birds that have been stopped in various stages of development and, though perfectly vigorous through subsequent ample nourishment, showing considerable range in size as between birds of the same brood.

However repugnant this system may be to our sensibilities, it is good practical natural selection, producing the largest number of strong offspring possible relative to the food supply, instead of none at all, or instead of a larger number of weaklings. —P. A. TAVERNER, *National Museum of Canada, Ottawa, January 10, 1935.*

**Efficiency of Nesting of the Tree Swallow.**—At my home near Fortine, Montana, bird houses which I have erected are occupied yearly by from eight to sixteen pairs of nesting Tree Swallows (*Iridoprocne bicolor*). For eight seasons I have kept more or less complete records of their nesting activities. In the case of sixty nests a full record has been obtained of the percentage of hatch and survival of the nestlings. The efficiency of propagation shown by the Tree Swallows in these representative nestings is shown below.

	First brood nests	Second brood nests
Nests with eggs.....	52	8
Eggs laid.....	324	39
Eggs hatched.....	319	39
Eggs failed to hatch.....	4	0
Eggs disappeared.....	1	0
Nestlings died.....	0	6
Nestlings taken by a Sparrow Hawk.....	12	0
Nestlings successfully raised.....	307	33
Nests that were 100 percent successful.....	44	6
Percentage of complete survival.....	94.7	84.6

Death of the six nestlings of two second broods was evidently caused by parasites. Hot weather does not seem to affect the nestlings adversely. Though raised in exposed wooden houses, the other six late broods of young survived temperatures as high as 97° in the shade.

Every year at least one pair of Eastern Sparrow Hawks (*Falco sparverius sparverius*) nests within a few hundred yards of our farmstead where the Tree Swallow houses are located. As a rule the hawks do not molest the swallows; but in 1931 the male bird of a pair of Sparrow Hawks that nested near-by acquired the habit of taking nestling Tree Swallows from the houses by reaching through the

small entrance holes. Twelve swallows were taken before I ended the hawk's depredations with a rifle. The female hawk successfully raised her brood of young without making any attempt to duplicate her mate's individual hunting habits.—WINTON W. FREDEMEYER, *Fortune, Montana, January 24, 1935.*

**Further Comments on the Cowbirds of the San Francisco Bay Region.**—The increase of cowbirds (*Molothrus ater*) in the San Francisco Bay region during the last ten years has been widely noted by local observers. Efforts to secure adult specimens were unproductive until the belated acquisition last year of a breeding pair (Grinnell, Condor, 36, 1934, pp. 218-219). Southwestern Alameda County seems to be the present center of abundance of the birds, as also the region of earliest record. Recently I obtained eight specimens near Irvington in this part of the County, through the courtesy of Mr. Nion Tucker and the assistance of Mr. Duke Trempe. These newly acquired specimens provide a more adequate basis for determination of race than has been had previously, and, because taken in early March, they point to permanent residence of the population.

On February 3, 1935, cowbirds were congregated at the locality mentioned, on the Bay shore, where grain had been put out for the ducks. Mr. James Moffitt and I saw several groups of ten or more and believe there were over fifty in the vicinity. On March 8, when several specimens were taken, one flock of at least thirty birds was seen. Since cowbirds are not known north of the Bay region, except in the interior, it seems unlikely that this group could represent a population breeding anywhere except locally. The flocks seemed to me quite comparable to the winter aggregations of resident birds in southern California, which disperse in the spring and summer. I doubt that the appearance of cowbirds in the spring in places about the Bay where they are absent in winter should be taken as evidence of migration. More probably these appearances are normal seasonal dispersals that lead to establishment of territories in which egg-laying will take place.

The skins of six males and four females now at hand have been measured. My method of measurement has been made to conform to that used by Dickey and van Rossem (Condor, 24, 1922, pp. 206-210), by checking results on specimens measured and reported upon by them. Average and extreme values for the group are: Males, wing, 104.8 (101.8-108.7); tail, 72.5 (70.6-74.6); culmen, 15.7 (14.8-16.6); bill depth at base, 10.2 (9.6-11.0); tarsus, 23.7 (22.0-24.7). Females, wing, 92.5 (9.09-94.4); tail, 62.0 (60.8-63.5); culmen, 13.9 (13.5-14.3); bill depth at base, 9.5 (9.1-10.2); tarsus, 22.4 (22.1-23.1).

Comparing these with Dickey and van Rossem's tables in their description of the race *californicus*, the males are found to equal or to slightly exceed *californicus* in wing length, tail length and bill depth. In length of culmen and tarsus they are as small or smaller than *obscurus* of the Colorado River. The females are in all measurements close to *obscurus*, except for bill depth which is intermediate. The females are colored like *californicus*, even more so than the original female commented upon by Grinnell. There is still, however, the element of doubt regarding the state of wear and fade of the *obscurus* series from the Colorado River, which may not be inherently less slaty than *californicus*.

Grinnell (*op. cit.*, p. 219) has referred to the *californicus* race of the San Joaquin Valley as a mosaic of intergrades. To me there appears to be no more heterogeneity in the San Joaquin group than in the Bay region group or than in Los Angeles County birds. All of our populations of the Pacific slope of California show a large, but not exceptional, degree of individual variation. Certainly the Bay group is not properly situated for geographic intergradation between *obscurus* of southern California and *artemisiae* of Nevada. Each of these populations of cowbirds in California has average size values which, if reliable, indicate slight inherent differences. If we are to follow Friedmann (Wilson Bull., 46, 1934, p. 28), Willett (Pac. Coast Avif. No. 21, 1933, p. 156) and Grinnell (*loc. cit.*), and conclude that a central California race is not "usefully recognizable" and conceive of a more inclusive, locally variable, *obscurus*, we should not allow this to obscure certain important facts first brought to light by the describers of *californicus*. These, as I interpret them, are that cowbirds increase in average size, perhaps somewhat unevenly, from the Colorado River Valley north through the San Diegan district to the San Joaquin

Valley. We now know of increase in certain average dimensions north on the coast to San Francisco Bay. East of the Sierra Nevada the size increase northward is more pronounced and more abrupt, leading to a large extreme, *artemisiae* of the Great Basin area.

If the Bay region population is the result either of single or recurrent immigrations, as the seeming absence of cowbirds prior to 1922 would indicate, the source of the new population is a matter of considerable importance. The characters of the birds now here suggest two possible modes of origin. The first is by invasion from both the San Joaquin and southern California areas, though invasions from the two areas may not have been equally great or simultaneous. The second is immigration from one or the other of these areas involving individuals which did not represent the average values of the areas of origin. Because of this they would build up a population of slightly different average nature that corresponded to their own genetic constitution. Such an original stock might have been sufficiently heterozygous to account for the individual variation in size now found.—ALDEN H. MILLER, *Museum of Vertebrate Zoology, Berkeley, California, May 14, 1935.*

## NOTES AND NEWS

We regret to announce the intention of George M. Wright to leave California as a permanent resident. His duties as chief of the Wildlife Division of the National Park Service call for transfer of his head-

quarters to Washington, D. C. Of course national parks are now well scattered across the full breadth of the country, but



Fig. 43. George M. Wright: Chief, Wildlife Division, National Park Service; Ex-President, Northern Division, Cooper Ornithological Club; Vice-President, Board of Governors, Cooper Ornithological Club.

their preponderance in the West should often lure him back to our coast. If he behaves like Harold C. Bryant, earlier emigrant to the Washington offices, the return visits will be all too infrequent.—A.H.M.

The use of birds in teaching elementary science is fraught with difficulties; they cannot often, in practice, be collected, nor even captured alive, and only rarely do circumstances allow of leisurely observation of them on the part of a group of pupils. Yet the study of birds remains one of the most appealing among elementary science subjects; meager opportunities for seeing what birds do may be supplemented by guided interpretation and discriminating instruction. Gayle B. Pickwell, Professor of Zoology in San Jose State College, with a teacher's knowledge of children and their reactions, and with an abundant background of experience as a first-hand student of bird behavior, has just put out a highly meritorious number of the Science Guide for Elementary Schools (vol. 1, no. 9) dealing with Birds (56 pp., including 17 ills.: published by California State Department of Education, April, 1935). While this "guide" pertains primarily to California, teachers in any part of the United States will gain ideas and inspiration from it. After all, it is an understanding knowledge of animal natural history gained early in life that will bring that tempered point of view, of man toward his biotic environment, which many people now believe will operate for his own best ultimate welfare.—J.G.



"The Hawks of North America" is the title of a book just issued by the National Association of Audubon Societies as part of its very worthy educational campaign toward the preservation of this valuable group of birds. The excellent colored plates were done by Allan Brooks and the authoritative text was compiled by John B. May.

# MINUTES OF COOPER CLUB MEETINGS

## NORTHERN DIVISION

MARCH.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held on Thursday, March 21, 1935, at 8:00 p.m., in Room 2003 Life Sciences Building, Berkeley, with President Miller in the Chair and fifty-five members and guests present. Minutes of the Northern Division for February were read and approved. Portions of the minutes of the Southern Division for February were read. February minutes of the Stanford Chapter were read by title. Mr. Paul F. Covel, 3133 Jordan Road, Oakland, Calif., was proposed for membership by J. M. Linsdale, and Mrs. Emanuel Fritz, 928 Fresno Ave., Berkeley, Calif., by Mrs. J. Grinnell.

Mrs. G. E. Kelly reported seeing fifteen White-throated Swifts in the glory-hole at Leona Heights on March 13. Howard Twining told of noting two male Rufous Hummingbirds in Strawberry Canyon, one on March 9 and one on March 17, each in the vicinity of Allen Hummingbirds. Mr. Grinnell reviewed "A Guide to Bird Songs," by Aretas A. Saunders, and expressed the wish that some equally gifted author would provide a similar study of the songs of our western birds. Mr. Alden Miller announced that a pamphlet by V. C. Wynne-Edwards of Montreal, which he had found useful when crossing the Atlantic last summer, has now been enlarged and published under the title "Birds of the North Atlantic."

The evening's program was a talk by Mr. Thomas T. McCabe on "Avifaunas of the Northwest, a Theory of Distribution." Mr. McCabe's long field experience in British Columbia and his familiarity not only with the high plateau country of the interior but also with the fringe of islands along the seacoast made him especially well qualified to analyze the

bird problems presented in that Province. It is his belief that the plateau country was held in the grip of the ice-age much longer than the coastal region, a theory apparently confirmed if the very slight degree of endemism of the resident forms is to be accepted as a criterion. The geographic races of the adjacent coast district tend to vary uniformly from those races of the same species occurring to the eastward, in the smaller size of the coastal birds and their tendency to deeper and more reddish hues. Apparently those variations which are found restricted to the northwest coast are locally evolved.

Adjourned.—HILDA W. GRINNELL, Secretary.

APRIL.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held on Thursday, April 25, 1935, at 8:00 p. m., in Room 2003, Life Sciences Building, Berkeley, with President Miller in the Chair and sixty members and guests present. Minutes of the Northern Division for March were read and approved. Minutes of the Southern Division for March were read. Applications for membership were: Louis A. Elmore, 511 Clay St., Ukiah, Calif., proposed by J. Grinnell; Charles H. Feltes, 216 Ruberto St., Modesto, Calif., by J. M. Linsdale; Tom Kirksey, Hamilton Field, Marin Co., Calif., by Mrs. Otis H. Smith.

Mr. Dyer reported upon the activities of his resident Road-runner, which this year started calling on January 31. A trick not noted last year is that of clapping its wings behind its back, thus making a sound audible for seventy-five yards. The bird's habit of carrying lizards led Mr. Dyer to time its activity in this regard. The longest observed period of continuously carrying an individual lizard in the bill was three hours. This year the Road-runner has secured a mate, but aside from a nest started by the pair in Mr. Dyer's house and then abandoned, no structure had been discovered up to the time of this report.

On April 20, Mr. B. C. Cain saw two Baird Sandpipers on Cypress Point, Monterey County. Mrs. Allen noted Hermit Warblers in the oak trees at her home on April 24. Miss Stedman asked whether Golden-crowned Sparrows frequenting a well-stocked feeding table would be apt to linger beyond the usual migration date.



Mr. Sumner, Sr., replied that he knew of no instance in which such lingering has occurred. Miss Selma Werner recorded seeing three Vermilion Flycatchers and six Arizona Hooded Orioles in Phoenix, Arizona, March 31. Mrs. A. P. Bigelow, a guest at the meeting, reported that a Utah correspondent, Mr. W. H. Meal, had written her of seeing five hundred Sandhill Cranes at the mouth of the Bear River on April 3, at the point where the grounds of the Bear River Duck Shooting Club adjoin the Federal Migratory Bird Refuge. Mrs. A. B. Stephens, on April 20, saw near the San Mateo bridge six Northern Phalaropes, four Egrets and about two hundred Knots. She also reported that on April 17 near the Cliff House, San Francisco, Commander Parmenter saw several Pigeon Guillemots and two Wandering Tattlers. Mr. Alden Miller said that he had just been handed a Yellow-breasted Chat, picked up dead under wires on Euclid Avenue, a species rarely seen in Berkeley. Mrs. G. E. Kelly reported upon fourteen species of shore birds and also gave an early date for the Olive-sided Flycatcher, she having seen one on the Stanford Campus on April 15.

Mr. Lewis W. Taylor, head of the Poultry Division of the University of California, spoke on the "Origin of the Domestic Fowl" and outlined the probable original ranges of the wild forms of *Gallus*. Mr. Taylor showed study skins of several of these and pointed out characteristics which are traceable in certain breeds of domestic fowl. The talk aroused such interest that informal discussion around the tray of skins lasted long after the close of the meeting.

Adjourned.—HILDA W. GRINNELL, Secretary.

#### STANFORD CHAPTER

MARCH.—The monthly meeting of the Stanford Chapter of the Cooper Ornithological Club was called to order by President Willis H. Rich on the evening of March 7. The minutes of the previous meeting were approved as read.

President Rich regretted to announce the resignation from the chairmanship of the Bay Shore Refuge Committee of Mrs. Sadie G. Hackley because of ill health. The Chair appointed Mr. John B. Price to this chairmanship and Mrs. Willis W. Wagener to serve as a new member on the committee. The secretary read a final report from Mrs. Hackley, who stated

(1) that she thought Mr. Norman Schofield of the State Fish and Game Commission should be appointed as an ex-officio member of the Bay Shore Refuge Committee; (2) that action by the Committee should be completed soon in order that the State Legislature should still be in session when invited to pass upon the proposal; (3) that Mr. Roydon of the Mackay Radio and Telegraph Company will be glad to cooperate by writing a letter to the State Fish and Game Commission enclosing a map of that company's property whenever we notify him to do so; (4) that the Alviso Salt Company has made no further developments on its lands for the past two years; and (5) that a letter should be written by the Northern Division of the Cooper Club to the president of said Company, a Mr. Hardy of San Francisco, quoting the law involved and asking him to cooperate. Discussion arose, led by Mr. Lastreto, as to the real value of this proposed refuge in terms of the birds and animals helped by its establishment. Mr. Lastreto also pointed out that since much of the proposed refuge is reclaimed land, and that since the Palo Alto Airport is to be located on a part of the refuge, a thorough investigation should be made to determine the true value of the proposed refuge. It was recommended by the Chair that the Committee undertake such an investigation.

In the field of literature, Mr. Miller mentioned the recent appearance of "Part VII" of the "Catalogue of Birds of the Americas" contributed by C. E. Hellmayr of the Field Museum of Natural History of Chicago and published by the same institution.

A White-tailed Kite was reported seen near Los Altos recently by Mr. Henry. Mr. Rich reported a white heron seen along the Bayshore Highway near San Francisco.

President Rich then introduced the speaker for the evening, Mr. Alden H. Miller of the University of California, who spoke on "The Natural History of the Loggerhead Shrike." Mr. Miller stated that his object in studying the shrikes has been to tie up the natural history of shrikes with their specific and subspecific classifications. He undertook to do this by making a careful study of their behavior. He pointed out that similar studies of other birds have done much to throw light on the behavior of birds. Mr. Miller then proceeded to tell something of the results of his studies, supplemented

with interesting personal experiences.

Adjourned.—WILBUR V. HENRY, *Secretary*.

#### SOUTHERN DIVISION

MARCH.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held at 8 o'clock, Tuesday evening, March 26, 1935, at the Los Angeles Museum, Exposition Park, Los Angeles, with President Cowles in the Chair and forty-eight members and guests present. Minutes of the Southern Division for February were read and approved. Minutes of the Northern Division for February were read. The application for membership of Miss Mary Louise Fossler, 550 North Los Robles Ave., Pasadena, proposed by Hildegard Howard, was presented.

There being no special program for the evening, President Cowles suggested that a few bird skins of unfamiliar and confusing species be submitted for identification and observation. Mr. Willett placed on the table a tray containing the Parasitic, Pomarine, and Long-tailed jaegers and, at the request of the Chair, gave a short explanatory talk concerning the general distribution of each species, its apparent abundance or scarcity in numbers off the Pacific Coast, the two plumage phases occurring in the Parasitic and Pomarine forms, and the differences in shape of the long middle tail feathers. Confusion arises when identifications are based on coloration of legs and feet. He described the method used by jaegers in procuring food by robbing gulls, terns, and shearwaters. Mr. Willett also called attention to Hildegard Howard's work on the bone characters of the different species, and to the fact that anyone interested in examining the specimens would find identifying bones accompanying each skin.

Mr. George Cantwell is investigating the cause of the death on March 19 of several hundred Cedar Waxwings while they were feeding on the fruit of the date palm. His report was read by Hildegard Howard. This same sudden death of Cedar Waxwings has occurred in other years and apparently may be brought about by eating the berries of the pepper trees, as well as the fruit of the date palm. Robins, too, have died in a similar manner from eating the China berry. A number of theories were advanced as to the cause of this rapid poisoning, acute indigestion, or respiratory paralysis, among birds in good physical condition. Several members

have secured specimens of the dead birds and are making a special study of the malady.

Adjourned.—LAURA B. LAW, *Secretary*.

APRIL.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held Sunday, April 28, 1935, at Henley's Camp, Sespe Canyon, on invitation extended by Messrs. Laurence and Sidney B. Peyton. In the morning, some of the members walked up canyon to a site most favorable for viewing the California Condors in flight. The weather, however, was not good for visibility and only two of the birds were seen.

In mid-afternoon the meeting was called to order, with President Cowles in the Chair and about 60 members and guests present, including the Marquis Hachisuka, visiting member from Japan, who is writing "The Birds of the Philippine Islands" and has published the third part of this work. Minutes of the Southern Division for March were read and approved. Minutes of the Northern Division for March were read. The following applications for membership were presented: Mr. William Stewart Robinson, 2795 McConnell Drive, Palms Station, Los Angeles, and Mr. Orey Tanner, 5019 Constance St., New Orleans, Louisiana, proposed by W. Lee Chambers; Mr. Carlos Stannard, Route 1, Box 1178, Phoenix, Arizona, proposed by Harry L. Crockett; Mr. Uhl R. Kuhn, U. S. Dept. Agriculture, Nogales, Arizona, proposed by Walter P. Taylor.

Mr. Sidney B. Peyton told of visiting a Condor's nest that was used last year and finding in it one perfect clam shell about two inches in diameter, and at least two quarts of shell fragments. The edges of the fragments were worn smooth and evidently had been carried from some beach, but the location of the nest was a considerable distance from the coast. Mr. Reis reported having seen a pair of Condors near the mouth of Gaviota Pass. Mr. Cantwell stated that his investigations on the death of the Cedar Waxwings were such as to lead him to believe that the birds had died from a hydrocyanic gas poisoning created by fermentation.

President Cowles conveyed to the Peytons the appreciation of the Southern Division members for another pleasant day at Henley's Camp and for the splendid hospitality which had been so kindly extended to all. In response Mr. Laurence

Peyton made the suggestion that a trip to Henley's Camp be considered, if a day afield is planned for the annual meeting of the Cooper Club next year when it is held in Los Angeles. Meeting adjourned.—LAURA B. LAW, *Secretary*.

#### TENTH ANNUAL MEETING

For ten years the members of the Cooper Ornithological Club have followed the fine old Quaker custom of holding "Yearly Meeting" and have found it good. This year we met on Friday morning, May 24, 1935, in the Life Sciences Building, University of California, Berkeley. When President Alden Miller of the Northern Division welcomed visitors from the south there were 74 people present, and by the end of the morning session there were 86 in the room. Mr. Harold Michener of Pasadena responded to Mr. Miller's welcome. The following program filled the morning session: Annual Behavior Pattern in the White-crowned Sparrow, by Barbara D. Blanchard, University of California; Effects on Bird Life of Human Activities in National Parks and Monuments, by E. Lowell Sumner, Jr., National Park Service; Bush-tits "Shadow-boxing," by John McB. Robertson, Buena Park; The Systematic Position of the Osprey, by Lawrence V. Compton, University of California; Birds and Man in Western Europe, by Tracy I. Storer, University of California at Davis. A most varied and profitable group of papers this proved to be, bringing forward many new facts regarding western birds. The last read paper gave us a clear picture of the present-day place of birds in the older countries as viewed by an American visitor.

Of greatest moment was the unscheduled contribution by Mr. Robert T. Moore, California Institute of Technology, on The Protection and Conservation of the Zoological Life of the Galapagos Archipelago. This paper brought news of the permissive creation by the Ecuadorean government of a zoological sanctuary where endemic species will receive the protection which is now vital to their continued existence. One provision of the act positively protects the peculiar Albatross of those islands, the Galapagos Penguin, and the unique Flightless Cormorant. Among the group of scientists who have worked untiringly to bring protection to the harassed fauna of the Galapagos, Mr. Moore paid high tribute to Mr. Harry S. Swarth, qualified

by field experience to champion the cause, and having given most generously of his time to aid it.

After an informal luncheon at the Faculty Club the group gathered at 2:00 p.m. for the afternoon session. Mr. Loye Miller presided, and papers presented were: The Molts and Plumages of Horned Larks, by William H. Behle, Museum of Vertebrate Zoology; More Evidence on the Communistic Habits of the California Woodpecker, by William E. Ritter, University of California; Relationships of New World Genera of Geese, by Alden H. Miller, University of California; An Observation on Eye-shine and Feeding Habits of the Poor-will, by Amelia S. Allen, Berkeley; Proportions of Limb Segments in Thrashers, by William L. Engels, University of California.

At the close of this session the Museum of Vertebrate Zoology, housed in the Life Sciences Building, held open house, the collections being inspected under the guidance of staff members and students. Whether furred, scaled or feathered, all specimens were ready for scrutiny. In the evening the Board of Governors and Directors met for dinner in the O'Neill Room of the Faculty Club, following which the Annual Business Meeting of the Board was held (see page 223).

On Saturday morning the newly-hatched "Cooper Club Incorporated" under the able guidance of Mr. Howard Robertson carried through its first business session with such precision of action that we are forced to classify it as a precocious rather than an altricial bird. At 10:30 o'clock Mr. Alden Miller resumed the Chair and the following papers were read: Three Tertiary Bird Fossils from the Western United States, by Lawrence V. Compton, University of California; Abnormalities in Birds: I. Tumors, by Harold Michener and Josephine R. Michener, Pasadena; An Exhibit of Rarities from the Collections of the California Academy of Sciences, by Mrs. M. E. McLellan Davidson, California Academy of Sciences; Up-hill Planters, by Joseph Grinnell, Museum of Vertebrate Zoology.

A most interesting unlisted paper was read at this session, "A Nomenclatural Problem in Mutation," by Marquis Hachisuka, it being our good fortune that this prominent world ornithologist should pass this way just now, homeward bound to Tokio.

Saturday afternoon, following a lunch-

eon at the Faculty Club, members convened in the auditorium of the Life Sciences Building, where Mr. Willis H. Rich, president of the Stanford Chapter, occupied the Chair; this was later taken by past-president Pickwell of the Northern Division, and then by current vice-president D. D. McLean, of the same Division.

Illustrated papers were largely the order of the afternoon, this group including: Nesting of the Black Swift in Sequoia National Park, by Joseph S. Dixon, National Park Service; Wintering and Nesting Activities of the Hepburn Rosy Finch in Washington State, by William T. Shaw, Fresno; Motion Pictures of Road-runners, by Ernest I. Dyer, Piedmont; a reel of motion pictures of raptorial birds taken by Mr. James Dixon of San Diego County and shown by Mr. Joseph Dixon. Unillustrated papers were: The White-throated Sparrow in Western North America, by Margaret W. Wythe, Museum of Vertebrate Zoology; Some Fossil Bird "Repeats" in California, by Loye Miller, University of California at Los Angeles; Do Eastern Birds Migrate Through the Great Basin, by Donald D. McLean, California Division of Fish and Game.

The annual dinner was held at 7:00 o'clock on Saturday evening at Hotel Durant, with 96 persons in attendance. Fragrant wild azaleas from the Boulder Creek home of Mrs. Amelia S. Allen added an unusual charm to the table decorations. During the dinner new acquaintances were made and old friendships revived by the informally seated groups. Plates removed, Mr. George Wright, acting as toastmaster in the same happy way his predecessor taught us to expect, called upon various members to rise and make good anew the reputation of the Club dinners for jollity. These speakers succeeded admirably, especially Mr. John R. Pemberton, called upon last. He showed a reel of motion pictures taken last year at San Diego and also some taken at the outing meeting of the Southern Division in Sespe Canyon. When Mr. Pemberton ran the series backwards, alleging that he must transfer the film from a borrowed reel back onto his own, more than one good ornithologist was startled and amazed to see the picture he presented in reverse action.

The tenth annual meeting closed on Sunday, May 26, with an all-day field trip. First, the beautifully kept aviaries of native birds belonging to Mr. Eric C. Kinsey of Manor, Marin County, were

visited; and then the group drove on to lunch beneath the redwoods which shade Lagunitas Creek. In the afternoon the murre and cormorant colonies of Point Reyes were visited.

LAURA B. LAW and HILDA W. GRINNELL,  
*Secretaries.*

#### GOVERNORS' MEETING

The Fourteenth Annual Meeting of the Board of Governors of the Cooper Ornithological Club was held in the O'Neill Room of the Faculty Club, University of California, at Berkeley, California, May 24, 1935. The meeting was called to order at 8:15 p. m., with President Loye H. Miller in the chair and the following members present: Mrs. Amelia S. Allen, Henry W. Carriger, W. Lee Chambers, J. S. Cooper, Joseph S. Dixon, Mrs. Hilda W. Grinnell, Joseph Grinnell, C. B. Lastreto, Mrs. Laura B. Law, Jean M. Linsdale, Donald McLean, Harold Michener, Alden H. Miller, Loye H. Miller, J. R. Pemberton, Gayle B. Pickwell, Wright M. Pierce, Guy C. Rich, Howard Robertson, John McB. Robertson, Tracy I. Storer, Harry S. Swarth, John G. Tyler, George Willett, Curtis Wright, and George M. Wright.

Minutes of the Thirteenth Annual Meeting were read and approved. A report of the Auditing Committee that the Business Managers' accounts for 1934 had been examined and found correct was read and accepted. The Business Managers' report was submitted by J. McB. Robertson and forms Appendix A of these minutes. The year 1934 started with a balance in the General Fund of \$1,553.93, and ended with a balance of \$1,531.76. The bonds in the Endowment Fund have a par value of \$11,200.00. One Avifauna, the "Birds of Nunivak Island, Alaska," by H. S. Swarth, was issued during the year, at a cost of \$426.15. A net loss of 36 members and subscribers was sustained during the year. The Chair appointed as Auditing Committee for 1935: J. R. Pemberton, Chairman, W. M. Pierce and Curtis Wright.

Business Manager W. Lee Chambers recommended that Endowment Funds, now in government bonds about to be called, be reinvested in safe stocks. On motion by C. B. Lastreto, seconded by W. M. Pierce, the Chair was instructed to appoint a committee of three to consult with the Business Managers regarding investments. Committee appointed: J. R. Pemberton, Chairman, Howard Robertson, George M. Wright.

The report of Editors, covering seven numbers of the Condor, May, 1934, to May, 1935, inclusive, was submitted by Joseph Grinnell, and comprises Appendix B of these minutes. Size of issue in the first six numbers remained about the same as in the preceding year, but the seventh, May, 1935, was nearly double normal bulk, this owing to contribution of \$200.00 by nine un-named members of the Club. In accordance with policy previously endorsed by the Board, photographs of prominent ornithologists to the number of nine, were published. Announcement was made of availability of several manuscripts worthy of publication in the Pacific Coast Avifauna series, the possibility of financing such publications being laid before the Board for consideration. It was recommended that the editorial staff of the Condor should consist of three "joint editors," instead of an editor and two associates, as now constituted. On motion by Howard Robertson, seconded by Joseph Dixon, and duly carried, the Editors' report was accepted, with the exception of the suggested change in the constitution of the editorial staff.

Howard Robertson announced completion of incorporation of the Club and presented articles of incorporation and copy of constitution and by-laws. Mr. Robertson stated further that at a Directors' Meeting held in Los Angeles, February 1, 1935, the following officers had been elected: President, Howard Robertson; Senior Vice-President, A. H. Miller; Junior Vice-President, J. S. Cooper; Secretary, George Willett; Assistant Secretary, Hilda W. Grinnell; Treasurer, John McB. Robertson; Business Manager, W. Lee Chambers; Editor, Joseph Grinnell; Associate Editors, Jean M. Linsdale and Alden H. Miller. The principal office of the Corporation is at 411 Chapman Building, Los Angeles, California, and its depository the Buena Park Branch of the Southern County Bank of Anaheim. The Treasurer and Business Manager are authorized to draw on corporation funds. The Chair expressed the thanks of the Board for Mr. Robertson's work as attorney for the organization.

A committee composed of T. I. Storer, Chairman, H. S. Swarth and Joseph Dixon, was appointed to nominate directors of corporation for the ensuing year. The Chair announced that the Annual Meeting for 1936 would be held in Los Angeles. Appreciation of the efforts of the North-

ern Division of the Club toward the success of the 1935 Annual Meeting was unanimously expressed.

Howard Robertson submitted form of acceptance of proxies and resolution ratifying acceptance of assets of the unincorporated body by the corporation. Adopted. C. B. Lastreto suggested signing of by-laws by charter members. Adopted.

Officers of the Board of Governors for the ensuing year were elected by acclamation as follows: President, Loye H. Miller; Vice-President, George M. Wright; Secretary, George Willett. Adjourned.—GEORGE WILLETT, *Secretary*.

A special meeting of the Board of Governors of the Cooper Ornithological Club was called by President L. H. Miller at the Durant Hotel, Berkeley, California, at 10:30 p.m., May 25, 1935. A quorum being present, seven resolutions were adopted, as follows:

1. Endorsing efforts of Federal officials toward conservation of water fowl, and expressing belief of Club in necessity of closed hunting season during coming year.
2. Urging designation of Federal agency to supervise closely all transplants of native and alien animals.
3. Urging control of CCC activities so as to conform exactly with recommendations of qualified wild-life advisors.
4. Recommending that the President of the United States be authorized to proclaim as National wards, from time to time, species of wild life because of their great rarity or educational value.
- 5, 6 and 7. Urging favorable action on bills establishing Big Bend National Park, Texas; Kings Canyon National Park, California; and Mount Olympus National Park, Washington.

8. Ordering a letter sent to the Governor of California protesting the grazing of cattle on the Los Baños Game Refuge. Adjourned.—GEORGE WILLETT, *Secretary*.

#### DIRECTORS' MEETING

A meeting of the Board of Directors of the Cooper Ornithological Club, Incorporated, was called at the Durant Hotel, Berkeley, California, May 25, 1935, at 10:45 p.m. President Howard Robertson was in the Chair and all members of the Board were present. Officers of the Board, the same as those previously designated, were elected for the ensuing year.

Adjourned.—GEORGE WILLETT, *Secretary*.



